Summary Report
Biosparging System Operations
at Old Navy Fuel Farm
January-June 1998
Naval Air Station, Brunswick, Maine

Contract No. N62472-92-D-1296
Contract Task Order No. 0035

U.S. NAVAL AIR STATION
BRUNSWICK, MAINE

Department of the Navy

Northern Division
Naval Facilities Engineering Command
10 Industrial Highway
Mail Stop No. 82
Lester, Pennsylvania 19113-2090

Prepared by

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November 1998
FINAL
296.0035

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LETTER OF TRANSMITTAL

TO Ms. Claudia Sait

Maine Department of Environmental Protection

State House, Station 17

August, ME 04333-0017

DATE 11/23/98	JOB NO. 296.0035.3650
ATTENTION: Ms. Claudia Sait	
RE: Contract No. N62472-92-D-1296	
CTO No. 0035	

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COPY TO E. Klawitter (w/ enclosure)
T. Williams (w/ enclosure)

SIGNED John A. Carnright for MEP
John A. Carnright

If enclosures are not as noted, kindly notify us at once.

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20 November 1998

Ms. Claudia Sait
Maine Department of Environmental Protection
State House, Station 17
Augusta, Maine 04333-0017

RE: Final Summary Report, Biosparging System Operations at Old Navy Fuel Farm, January-June 1998, Naval Air Station, Brunswick, Maine
Contract No. N62472-92-D-1296; Contract Task Order No. 0035
EA Project No. 29600.35

Dear Ms. Sait:

On behalf of the Department of the Navy, EA Engineering, Science, and Technology is pleased to submit the above referenced report. This report is submitted for your information and use.

If additional information is required, please contact Mr. Emil Klawitter at (610) 595-0567, Ext. 161.

Sincerely,

John A. Carnright
Project Manager

JAC/caw
Enclosures

cc: E. Klawitter
T. Williams

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Biosparging System Operations
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January-June 1998
Naval Air Station, Brunswick, Maine

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John A. Carnright
CTO Manager

16 Nov. 1998
Date

Charles R. Flynn, Jr. Ph.D., P.H.
Program Manager

13 Nov 98
Date

November 1998
FINAL
Project No. 296.0035

QUALITY REVIEW STATEMENT

Contract No. N62472-92-D-1296 EA Project Number: 29600.35.3650
Contract Task Order No. 0035
Activity: Naval Air Station, Brunswick, Maine

Description of Report/Deliverable:

Final Summary Report, Biosparging System Operations at Old Navy Fuel Farm, January-June 1998, Naval Air Station, Brunswick, Maine

EA CTO Manager: John A. Carnright

In compliance with EA's Quality Procedures for review of deliverables outlined in the Quality Management Plan, and as per State of Maine Law, this final deliverable has been reviewed for quality by the undersigned Senior Technical Reviewer and reviewed for its technical content by the undersigned State of Maine Certified Professional. The information presented in this report/deliverable has been prepared in accordance with the approved Implementation Plan for the Contract Task Order (CTO) and reflects a proper presentation of the data and/or the conclusions drawn and/or the analyses or design completed during the conduct of the work. This statement is based upon the standards identified in the CTO and/or the standard of care existing at the time of preparation.

Senior Technical Reviewer(s)

Michael S. Battle, P.G. 11-16-98
Senior Technical Reviewer (Date)

Charles E. McLeod, Jr., P.E. 11-16-98
State of Maine Professional Engineer (No. 8910) (Date)

Paul W. Higgins, C.G. 11-13-98
State of Maine Certified Geologist (No. 259) (Date)

Summary Report
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January-June 1998
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John A. Carnright
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Date

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1. BACKGROUND INFORMATION

1.1 INTRODUCTION

Under Contract No. N62472-92-D-1296, Northern Division, Naval Facilities Engineering Command issued Contract Task Order No. 0035 to EA Engineering, Science, and Technology to perform remedial system operations and monitoring at the Old Navy Fuel Farm, Naval Air Station (NAS) Brunswick, Maine. NAS Brunswick is located south of the Androscoggin River between Brunswick and Bath, Maine (Figure 1-1). The layout of the Old Navy Fuel Farm is shown on Figure 1-2.

NAS Brunswick is an active base for Naval air operations owned and operated by the Federal government through the Department of the Navy. In 1987, NAS Brunswick was placed on the National Priorities List by the U.S. Environmental Protection Agency (EPA) and is currently participating in the Navy's Installation Restoration Program. In August 1996, active *in situ* remediation was instituted utilizing biosparging technology for reduction of petroleum-related hydrocarbon concentrations in site soil and ground water at the Old Navy Fuel Farm.

This report provides the results of biosparging system operating and monitoring data, including ground-water chemical analyses, for the period of 1 January - 30 June 1998.

1.2 SITE HISTORY

The Old Navy Fuel Farm site is located on the northeast portion of NAS Brunswick grounds, and is bounded on the south by Fitch Avenue, on the west by 6th Street, and to the north and east by undeveloped land. The site was previously used as a petroleum bulk storage facility and was decommissioned in 1993. Currently, only components of the biosparging system (originally constructed as a soil vapor extraction/aquifer air sparging system), installed following fuel farm decommissioning, and a storm sewer system exist at the site. Surface grade consists primarily of a level field of grass.

1.2.1 Site Geologic Conditions

The topography surrounding NAS Brunswick is somewhat irregular due to erosion of surficial sand deposits by streams. East of NAS Brunswick, the topography becomes more rounded and controlled by bedrock. Topography at NAS Brunswick exhibits little relief. Major rivers in the area which receive drainage from NAS Brunswick consist of the Androscoggin River, located less than 1 mi to the north, and Mere Brook located less than 1 mi to the east-southeast. Drainage from the eastern part of NAS Brunswick, which includes the Old Navy Fuel Farm site, is toward Mere Brook, which discharges to Harpswell Cove about 3 mi to the south. Harpswell Cove is a tidally influenced marine inlet.

Previous hydrogeologic investigations (O'Brien & Gere Engineers, Inc. 1990, 1992) confirmed that the site is underlain by a sandy deposit which is continuous and is, in turn, underlain by a glacio-marine silty clay deposit (designated as the Presumpscot Formation by the Maine Geological Survey). The sandy deposit thickness ranges from 2.5 to 9 ft with thicker zones located at the northwest section of the site. The ground-water table occurs in the sandy zone and flows generally to the south-southeast.

1.2.2 Historical Petroleum Bulk Storage and Environmental Investigation Summary

Prior to decommissioning in 1993, the Old Navy Fuel Farm consisted of two separate petroleum bulk storage tank farms which together included nine mounded underground storage tanks. All underground storage tanks, piping, and associated appurtenances were removed during facility decommissioning. The older, western tank farm, included five underground storage tanks, previously identified as underground storage tanks T-101 through T-105. Underground storage tanks T-101 through T-103 were 100,000-gal capacity tanks used for storage of petroleum sludge, unleaded gasoline, and aviation gasoline, respectively. Underground storage tanks T-104 and T-105 were both 25,000-gal capacity tanks used for storage of ethylene glycol. The newer, eastern Fuel Farm included four underground storage tanks, previously identified as underground storage tanks T-202 through T-205. Each of these underground storage tanks was 100,000-gal capacity tanks used for storage of JP-5 fuel.

Previous environmental investigations (O'Brien & Gere Engineers, Inc. 1990, 1992) identified two distinct dissolved-phase hydrocarbon plumes. The first plume was located in the east central portion of the Old Navy Fuel Farm and appeared to originate in the vicinity of former JP-5 underground storage tank T-202. This plume previously extended downgradient from the former location of T-202 toward the south-southeast and consisted primarily of benzene, toluene, ethylbenzene, and xylene (BTEX) compounds. Monitoring well MW-211 (previously designated as MW-J) is currently located adjacent to the former location of T-202.

The second dissolved-phase hydrocarbon plume was located in the north-central portion of the western half of the Old Navy Fuel Farm and appeared to originate in the vicinity of former glycol tanks T-104 and T-105. This plume is characterized principally by BTEX compounds, although at significantly lower concentrations than the eastern hydrocarbon plume. Well point WP-05 is currently located in the vicinity of the former locations of T-104 and T-105.

1.3 SUMMARY OF BIOSPARGING SYSTEM OPERATIONS

As currently configured, the biosparging system includes a 1,350 ft^2 treatment building and a network of lateral aeration trenches and vertical sparge wells located to the east of the treatment building as shown on Figure 1-2. Operation of the existing system in a biosparging mode utilizes low-flow air injection from mechanical sparge compressors located in the treatment building to a subsurface network of sparge wells.

The objective of biosparging at the Old Navy Fuel Farm is to aerate the ground water and limited vadose zone within the targeted remedial area to provide sufficient oxygen for indigenous aerobic micro-organisms to metabolize petroleum-related hydrocarbons. Additional monitoring procedures necessary to evaluate the effectiveness of the biosparging system include water quality indicator parameter measurements and a ground-water sampling program. To provide sufficient ground-water sampling locations for biosparging effectiveness monitoring, 21 shallow well points located throughout the targeted remedial area are monitored in addition to 11 site monitoring wells. These monitoring locations are visited bi-monthly throughout the operational period to collect atmospheric and water quality indicator parameter measurements. During this reporting period, from 1 January to 30 June 1998, monitoring well MW-56R was obstructed and could not be gauged or sampled; and well points WP-13 and WP-20 were damaged in June 1998 and could not be gauged or sampled. As indicated in a previous summary report (EA 1998), decreases in ground-water temperature inhibit the *in situ* biodegradation process. In response to decreases in ground-water temperature (<5 °C), the biosparging system (western remedial zone) was deactivated during the period from 15 February to 30 March 1998. The eastern remedial zone was deactivated during the period from 15 February to 2 April 1998.

During 1997 and 1998, mechanical (piping and valving) modifications were made to the sparge air delivery system to enhance the control and distribution of sparge air to the western and eastern remediation zones. These improvements included the installation of aboveground PVC valves at 20 selected sparge line locations focused in areas recommended for enhanced biosparging (EA 1997a). Additional system improvements are scheduled for the July-December 1998 operational period, along with repairs to the damaged well points. Installation of additional monitoring wells is also planned.

1.3.1 Biosparging System Operation and Maintenance Activities

When operated in the biosparging mode, sparging system flow rates and injection pressures are adjusted to effect the controlled distribution of oxygen to the ground water and limited vadose zone, while minimizing hydrocarbon volatilization effects. In this manner, *in situ* metabolism of hydrocarbons is theoretically maximized, while the release of volatilized hydrocarbons to the atmosphere is minimized. During operations and maintenance visits, technicians monitor injection pressures in conjunction with hydrostatic resistance (as a function of current well gauging data) and re-adjust the system as necessary. A Foxboro TVA-1000 photoionization detector (PID)/flame ionization detector (FID) is used to measure volatile hydrocarbon (TVH) concentrations in the vadose zone soil (via newly installed well points and site monitoring wells) to monitor for potential TVH release to atmosphere. A LandTec Model GA-90 Methane/O_2/CO_2 analyzer is used to measure well point headspace vapor to assess the effect of the biosparging system on methane and carbon dioxide production, and to indicate differential areas of a reduced/depressed percent oxygen in the vadose zone.

Three sparge compressors (C-1A, C-1B, and C-2) are used to supply pressurized air to the sparge air injection wells. The compressors are operated at low pressure (7-12 psig) and moderate flow (250-300 cfm) sufficient to provide air injection to the sparge wells. The layout of the sparge compressor and injection manifold is provided on Figure 1-3.

1.3.2 Biosparging System Effectiveness Monitoring Procedures

Since biosparging is a low pressure *in situ* aeration process, the effectiveness of biosparging systems may be assessed through verification of increased microbial activity (via direct microbial population studies and/or biodegradation indicator parameters such as electron acceptor and nutrient studies) and confirmation of corresponding reduction in dissolved phase hydrocarbon concentration in ground water. Previous assessments of degrader microbial populations (EA 1997b) have served to document an increase in microbial activity in response to biosparging operations at the Old Navy Fuel Farm. Based on this prior documentation, collection, and analysis of dedicated ground-water samples for microbial populations was discontinued following the 25-26 June 1997 sampling event. The effectiveness of biosparging operations is currently assessed by conducting ground-water sampling to quantify concentrations of petroleum-related hydrocarbons, iron, and manganese. Well gauging and water quality indicator parameter data (particularly dissolved oxygen, reduction-oxidation potential [redox], and pH) are also obtained to ensure that subsurface conditions are favorable to support a hydrocarbon-degrading microbial population and to assess the effect of the biosparging system on active metabolic processes. Well riser headspace analysis for TVH, methane gas, oxygen, and carbon dioxide concentrations is conducted using field instrumentation to assess the effect of the biosparging system on active metabolic processes.

Chemical analyses of ground-water samples include BTEX, methyl tertiary-butyl ether, total petroleum hydrocarbons (TPH)-Gasoline Range Organics (GRO), and TPH-Diesel Range Organics (DRO).

1.4 REPORT ORGANIZATION

The remaining chapters of this report include presentation and discussion of the following: field monitoring and sampling activities, presentation of biosparging system performance data, summarization of analytical results, and assessment of biosparging system performance/ effectiveness.

Chapter 2, Monitoring and Sampling Procedures, provides a summary of the field activities, including water level gauging; measurement of water quality indicator parameters; monitoring for the presence of volatile hydrocarbons, methane, carbon dioxide, and oxygen; and ground-water sampling.

Chapter 3, Discussion of Results, discusses biosparging system operations and results of the monitoring and sampling activities detailed in Chapter 2.

2. MONITORING AND SAMPLING PROCEDURES

2.1 WELL GAUGING AND WATER QUALITY MONITORING PROGRAM

Well gauging and water quality indicator parameter data were collected during each of the 13 site operations and monitoring visits during the January-June 1998 operational period. Field personnel gauged monitoring wells located within the vicinity of the Old Navy Fuel Farm (10 total) and well points (14 of 19 total) to determine depth to ground water and absence/ presence of light, non-aqueous phase liquid (LNAPL). The other 5 of 19 well points (WP-16R, WP-17R, WP-18R, WP-21, and WP-22) are constructed of 1-in. inside diameter PVC pipe and, because of field instrument size, could not be sampled *in situ* for water quality indicator parameters. Immediately following well gauging, water quality indicator parameter data were recorded at these locations. Monitoring well and well point locations are shown on Figure 1-2.

2.1.1 Well Gauging Methodology

The time interval for the collection of well gauging data was minimized to the extent possible, thus assuring the representativeness of interpreted ground-water flow data. To measure the concentrations of methane, oxygen, and carbon dioxide in the well riser headspace, a LandTec Model GA-90 methane/O_2/CO_2 analyzer was used. Well gauging was conducted using a Solinst Model 121 interface meter capable of detecting LNAPL at a minimum thickness of 0.01 ft. The data were recorded on the Field Record of Water Quality Analysis forms provided in Appendix A.

2.1.2 Water Quality Indicator Parameter Measurement Methodology

Field measurements of water quality indicator parameters were obtained from January through June 1998 to assess the variation in water quality among well points and monitoring wells. Indicator parameters, including temperature, pH, conductivity, dissolved oxygen, and Eh, were measured *in situ* using a Yellow Springs Instrument Model 600D multiparameter water quality meter. Upon completion of the manufacturer-recommended instrument calibration procedures, field measurements were obtained by immersing the instrument sonde below the water level in each well. *In situ* water quality indicator parameter data were recorded on the Field Record of Water Quality Analysis forms provided in Appendix A.

2.2 WELL POINT AIR QUALITY MONITORING PROGRAM

From January through June 1998, bimonthly field monitoring was performed at up to 21 well points for TVH, methane, oxygen, and carbon dioxide concentrations. TVH concentrations were measured at 21 well points to assess the potential effects of active biosparging on partitioning/volatilization of hydrocarbons from ground water to the well point headspace. Increases in TVH concentration in well-point riser headspace may be interpreted as excessive

aeration of the saturated zone. Upon opening the top of each well point, a Foxboro TVA-1000 PID/FID was used to monitor the presence and concentration of TVH. These data were recorded on the Field Record of Biosparging Well Point Monitoring forms provided in Appendix B.

To monitor for the presence of methane in well point headspace, a Landtec Model GA-90 methane detector was used to directly measure percent methane and percent oxygen. A decrease in methane concentration may be interpreted as a reduction in anaerobic microbial activity within the remedial area. These data were recorded on the Field Record of Biosparging Well Point Monitoring forms provided in Appendix B.

2.3 GROUND-WATER SAMPLING PROGRAM

2.3.1 Overview

The effectiveness of the biosparging system is assessed by verifying long-term reduction in dissolved-phase hydrocarbon concentrations in site ground water. Baseline ground-water sampling (August 1996) and interim ground-water sampling (December 1996, June and December 1997) were conducted to provide data relative to potential biosparging system effectiveness at the Old Navy Fuel Farm. The ground-water sampling program includes sample collection and chemical analyses to assess the concentrations of dissolved-phase hydrocarbons in shallow ground water.

One ground-water sampling event was conducted during the reporting period from 16 to 18 June 1998. Sampling was conducted at 9 monitoring wells and 19 selected well points located at or in the vicinity of the Old Navy Fuel Farm. The monitoring wells included in the ground-water sampling event were MW-44, MW-49, MW-51, MW-54, MW-58, MW-61R, MW-62, MW-211, and MW-213. Nineteen well points were sampled during the ground-water sampling program (WP-1 through WP-12, WP-14, WP-15, WP-16R, WP-17R, WP-18R, WP-21, and WP-22). Well Points WP-13, WP-19, and WP-20 were destroyed during NAS Brunswick base activities in early June 1998 and were unavailable for the ground-water sampling event. Monitoring well MW-56R was obstructed during this reporting period and could not be sampled. Sampling methodologies performed in the field are discussed below. A summary of the ground-water sampling and analysis program is provided in Table 2-1.

2.3.2 Sampling Methodology

A complete round of well gauging and measurement of water quality indicator parameters was performed on 16 June 1998. Following the gauging event, monitoring wells and well points were sampled. Monitoring wells were sampled using "low-flow" techniques consistent with those employed during the base-wide Long-Term Monitoring Program. A standard operating procedure was developed for this program based on draft guidance prepared by EPA Region I (U.S. EPA 1994) which conforms with the procedures described in the long-term monitoring plan (ABB-ES 1994). This technique incorporates the use of variable speed submersible pumps (Grundfos Rediflo) and clean, dedicated polypropylene discharge tubing. Following the gauging

task, well purging is initiated at a low-flow pumping rate during which water quality indicator parameters, flow rate, and drawdown are monitored and recorded at 3- to 5-minute intervals until stabililization of water quality parameters is achieved.

Well points were purged using new, dedicated polyethylene tubing and an ISCO Model 2700 peristaltic pump with dedicated 3/8-in. outer diameter Masterflex Silicone C-Flex® tubing. The pumping system was operated until all well points were purged dry. Well points were then allowed to recharge overnight and were sampled within the 24-hour interval following purging. Well point ground-water sampling was conducted using the ISCO peristaltic pump and polyethylene tubing as described for well point purging operations.

2.3.2.1 Summary of Ground-Water Sampling Conducted on 16-18 June 1998

The fourth interim ground-water sampling event, completed during active biosparging, was conducted on 16-18 June 1998 at 19 of 22 well points, 5 of 7 ground-water monitoring wells located within the remediation zone (MW-44, MW-54, MW-61R, MW-211, and MW-213), and 4 perimeter monitoring wells (MW-49, MW-51, MW-58, and MW-62). Prior to sampling, each well was gauged to determine the absence/presence of LNAPL, depth to ground water, and depth to bottom using a Solinst Model 121 interface meter graduated at 0.01-ft intervals. Well gauging confirmed the absence of measurable LNAPL at all locations. The Field Record of Well Gauging, Purging, and Sampling forms completed during the sampling event are provided in Appendix C.

Ground-water samples were submitted to the laboratory under two sample delivery groups. One ground-water sample was collected from each of the monitoring wells/well points (28 total locations); in addition, duplicate ground-water samples (3 total) were collected from well points WP-4 and WP-6, and monitoring well MW-44. Two equipment rinsate blanks were collected by pouring de-ionized water through the sampling equipment (i.e., dedicated polypropylene bailers/ ISCO polyethylene tubing) and into the appropriate sample containers. To assess the potential for contamination during sample transport, two trip blanks were analyzed, one per sample delivery group. Aqueous samples were shipped under chain-of-custody to the laboratory via overnight courier upon completion of each sample delivery group. Samples were submitted to EA Laboratories of Sparks, Maryland. Ground-water (including duplicate) samples and rinsate blanks were analyzed for BTEX and methyl tertiary-butyl ether (MTBE) by EPA Method 602, TPH-GRO by Maine Department of Human Services (DHS)–Health and Environmental Testing Laboratory (HETL) Method 4.2.17, and TPH-DRO by Maine DHS–HETL Method 4.1.25. Trip blank samples were analyzed only for BTEX and MTBE by EPA Method 602. The analytical narrative and Form I data are provided in Appendix D.

Following sample collection for offsite laboratory analyses, an additional grab sample was collected to permit onsite colorimetric testing for ferrous iron and manganese. Following acidification with HCL and vacuum filtration to remove particulate matter, a Hach Model DR-2000 spectrometer was used to measure concentrations of ferrous iron and manganese in the filtrate by Hach Methods 8146 and 8034, respectively.

TABLE 2-1 SUMMARY OF CHEMICAL AND BIOLOGICAL ANALYTICAL PROGRAM
OLD NAVY FUEL FARM, NAVAL AIR STATION, BRUNSWICK, MAINE

Chemical Analyses	
Analyte	Method
BTEX and MTBE	EPA 602
TPH-GRO	Maine DHS-HETL Method 4.2.17
TPH-DRO	Maine DHS-HETL Method 4.1.25
Ferrous Iron	HACH Method 8146
Manganese	HACH Method 8034
Methane (vapor phase)	Landtec GA-90

NOTE: BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
DRO = Diesel Range Organics.
GRO = Gasoline Range Organics.
LOP = Laboratory operating procedure.
MEDEP = Maine Department of Environmental Protection.
MTBE = Methyl tertiary-butyl ether.
TPH = Total petroleum hydrocarbons.
DHS = Department of Human Services.
HETL = Health and Environmental Testing Laboratory.

3. DISCUSSION OF RESULTS

This chapter summarizes the Old Navy Fuel Farm biosparging system field monitoring, analytical results, system operations, and monitoring data for the period 1 January through 30 June 1998. An assessment of *in situ* biodegradation in progress at the Old Navy Fuel Farm is provided based on biosparging system monitoring data (January-June 1998) and results of ground-water sampling conducted during June 1998.

3.1 SUMMARY OF BIOSPARGING SYSTEM OPERATION AND MONITORING DATA

Field personnel performed a total of 13 operations and maintenance and monitoring site visits during the period from 1 January to 30 June 1998. Site visits were conducted on 6 and 22 January; 5 and 15 February; 2 and 18 March; 14 and 25 April; 7 and 20-21 May; and 9, 16, and 30 June. Biosparging system performance and monitoring data are provided in the Field Record of Biosparging System Operations forms (Appendix E). Tasks performed during each site visit included:

- Monitoring of biosparging system operational parameters
- Gauging of water levels and measurement of water quality indicator parameters at monitoring wells and well points
- Field analysis of well point head space TVH, methane, oxygen, and carbon dioxide concentrations
- Inspection of biosparging system components and remedial area for evidence of air injection
- Inspection of biosparging system components for functionality; performance of repairs as necessary.

3.1.1 Biosparging System Operational Summary

The Old Navy Fuel Farm biosparging system was activated on 8 August 1996 using the injection of compressed air in both lateral aeration trenches and sparge wells. Lateral aeration was subsequently suspended, and enhancements to the sparge well network were accomplished. Currently, the system operates through a network of vertical sparge wells utilizing low-flow air injection. Ambient air injection is accomplished by sparge compressors C-1A, C-1B, and C-2 which supply compressed air (approximately 250-300 cfm each at 7-12 psig) to the eastern and western sparge well networks.

During operations and maintenance visits, injection pressures and flow rates were measured at field service vaults using dedicated gauges or were confirmed by audio/visual evidence (i.e., obvious surface water/service vault water aeration and audible supply line air flow). During this reporting period, all three sparge compressors were operated continuously except due to mechanical failure and/or during site activities requiring temporary de-activation of the biosparging system. The biosparge system was deactivated on 15 February due to low (<5°C) ground-water temperatures. On 30 March, the western remedial zone biosparge system was reactivated; and on 2 April, the eastern remedial zone biosparge system was reactivated.

3.1.2 Monitoring Well and Well Point Gauging Data

Field personnel gauged 21 well points and 10 shallow monitoring wells located at and in the vicinity of the Old Navy Fuel Farm during 13 operations and monitoring site visits, except when prevented by weather conditions and/or physical obstructions. Well point WP-19 was not gauged because it was destroyed during July 1997. Gauging was performed at MW-46 during February and May 1998 only. MW-49 was substituted as an alternative downgradient well location for MW-46. Monitoring well MW-56R was physically blocked and not gauged during the reporting period. Monitoring well MW-56R is scheduled for repair/replacement during the July-December 1998 operations period. A summary of the well gauging data for the 6-month reporting period is provided in Table 3-1. Review of the gauging data indicates that the water table exhibited a gradual increase in elevation during the period January-June 1998. LNAPL was not detected in any monitoring wells or well points during the gauging events.

3.1.3 Water Quality Indicator Parameter Data

Field personnel measured water quality indicator parameters in 21 well points and 10 shallow monitoring wells located at and in the vicinity of the Old Navy Fuel Farm during the 13 site visits. Variations in number of wells monitored per visit are attributable to weather-related restrictions and/or physical obstructions. The dissolved oxygen concentration in ground water, as measured at well points located within the treatment area, increased from an average of 6.02 mg/L in early January 1998 to >10 mg/L at 20 locations by early April 1998. A decreasing trend in the dissolved oxygen concentration occurred from mid-April through June 1998. The average temperature of ground water gradually increased from 8.57°C on 6 January to 15.60°C on 30 June 1998. The monthly average pH, conductivity, and redox values remained consistent throughout the reporting period. A summary of water quality indicator parameter data collected during the site visits is provided in Table 3-2.

3.1.4 Well Point Headspace Vapor Measurements

Field personnel field measured well point riser headspace for TVH concentration monthly during the reporting period. TVH headspace analysis was conducted once per month in January, February, March, April, May, and June 1998. Headspace analysis was not conducted during the 7 May 1998 site visit due to heavy rain; partial readings were obtained on 25 April 1998 due to rain conditions affecting PID instrument response. Variations in instrument response by FID

compared to PID occur in the presence of methane and non-methane volatile hydrocarbons. FID instrumentation responds to the combined parameters of methane and other volatile hydrocarbons, while the PID responds to non-methane (TVH) compounds. Elevated FID responses observed without corresponding PID responses were assumed to be indicative of the presence methane gas. During the reporting period, TVH concentrations greater than 10 ppm_v were observed in 13 well point risers. A summary of the well point headspace monitoring of FID TVH concentrations and PID TVH concentrations is provided in Table 3-3.

On 16 June 1998, prior to the ground-water sampling event, the presence of FID TVH concentrations and PID TVH concentrations and oxygen was quantitatively assessed using a Landtec GA-90 methane detector. The instrument directly measured methane and oxygen headspace concentrations as percent air. Methane was detected in 4 of the 14 well points (WP-02, WP-05, WP-07, and WP-12) at concentrations ranging from 0.1 percent (WP-5) to 2.7 percent (WP-02). Percent oxygen measurements ranged from 12.7 percent (WP-12) to 20.8 percent (WP-01,WP-03,WP-06, WP-07, WP-09, WP-10, WP-11, and WP-14). A summary of FID TVH concentrations, PID TVH concentrations, and percent methane/oxygen results from the headspace analysis from 16 June 1998 are provided in Table 3-4.

3.2 SUMMARY OF GROUND-WATER SAMPLING PROGRAM RESULTS

Ground-water sampling was conducted at the Old Navy Fuel Farm during the period 16-18 June 1998 to assess ground-water conditions after approximately 24 months of active biosparging. Prior to the ground-water sampling event, water level gauging and water quality indicator parameter data were collected from the shallow monitoring wells located at and in the vicinity of the Old Navy Fuel Farm (MW-43, MW-44, MW-49, MW-51, MW-54, MW-58, MW-61R, MW-62, MW-211, and MW-213) and from 19 existing well points. Monitoring well MW-56R was not gauged or sampled due to physical obstruction.

Ground-water samples (28 total) were collected from 9 monitoring wells and 19 well points. Well points WP-13, WP-19, WP-20 and monitoring well MW-43 were not sampled. WP-13 and WP-20 were inaccessible due to bent casings, WP-19 was destroyed, and MW-43 yielded insufficient volume for representative ground-water samples.

Ground-water samples were analyzed onsite for ferrous iron and manganese using a Hach Model DR-2000 spectrometer. Samples from the monitoring wells and well points were shipped to EA Laboratories and analyzed for BTEX and MTBE by EPA Method 602, TPH-GRO by Maine DHS-HETL Method 4.2.17, and TPH-DRO by Maine DHS-HETL Method 4.1.25.

3.2.1 Well Gauging Results

Prior to ground-water sampling, field personnel gauged 10 monitoring wells located at and in the vicinity of the Old Navy Fuel Farm and 14 of 19 existing well points on 16 June 1998 to determine depth to water and note absence/presence of LNAPL. The other 5 of 19 well points (WP-16R, WP-17R, WP-18R, WP-21, and WP-22) are of small diameter and were gauged for

depth to water only. Monitoring well MW-56R was not gauged due to physical obstruction of the well riser. LNAPL was not observed in any of the monitoring wells or well points. The ground-water elevation in the 10 monitoring wells ranged from 62.37 ft mean sea level in MW-49 to 73.07 ft mean sea level in MW-062. Table 3-1 provides a summary of Old Navy Fuel Farm gauging data for the reporting period.

Figure 3-1 provides the interpreted water table elevations for the 16 June 1998 gauging event. Ground-water flow is interpreted to be to the southeast. The overall ground-water flow direction observed during the 16 June 1998 gauging event, when the biosparging system was active, was similar to that observed during the August 1996 gauging event (prior to activation of the biosparging system).

3.2.2 Ground-Water Sampling Results

A total of 28 ground-water samples were collected from 9 monitoring wells (MW-44, MW-49, MW-51, MW-54, MW-58, MW-61R, MW-62, MW-211, and MW-213) and 19 well points (WP-01 through WP-12, WP-14, WP-15, WP-16R, WP-17R, WP-18R, WP-21, and WP-22) from 16 to 18 June 1998. Analytical results for the June 1998 ground-water sampling event are summarized in Table 3-5. Figures 3-2 through 3-4 provide interpreted concentration isopleths for total BTEX, TPH-GRO, and TPH-DRO concentrations in ground water, respectively.

Total BTEX was reported in 21 of 28 ground-water samples at concentrations ranging from 1 μg/L (WP-08 and WP-11) to 8,352 μg/L (WP-05). Total BTEX was reported at a concentration greater than 100 μg/L in 5 of 28 samples: WP-05 (8,352 μg/L), WP-17R (189μg/L), WP-21 (547 μg/L), WP-22 (1,280 μg/L), and MW-211 (2,748 μg/L). Benzene was reported in 4 of 28 samples at concentrations ranging from 41 μg/L (WP-21) to 150 μg/L (WP-22). Toluene was reported in 15 of 28 samples. Ethylbenzene was reported in 8 of 28 samples. Total xylenes were the most frequently detected compound, reported in 21 of 28 samples. No volatile organic compounds were reported in the equipment rinsate blanks or trip blanks.

MTBE was detected in only 2 of 28 ground-water samples at concentrations of 4 μg/L (MW-58) and 5 μg/L (MW-61). MTBE was not detected in the equipment rinsate blanks or the trip blank.

TPH-GRO were reported in 22 of 28 ground-water samples at concentrations ranging from 21 μg/L (MW-51) to 15,000 μg/L (WP-05). Concentrations of TPH-GRO were reported above 1,000 μg/L in 7 of 28 samples: WP-02 (2,400 μg/L), WP-05 (15,000 μg/L), WP-07 (1,800 μg/L), WP-17R (1,900 μg/L), WP-21 (3,800 μg/L), WP-22 (3,900 μg/L), and MW-211 (4,400 μg/L). TPH-GRO were detected in 1 of 2 equipment rinsate blanks at a concentration of 22 μg/L. As indicated in Table 3-5, GRO concentrations in five well points (WP-02, WP-05, WP-17R, WP-21, and WP-22) were reported as outside the original calibration range and received a laboratory qualifier ("E"). The original laboratory instrument calibration curve was acceptable, but too wide to provide good definition of low concentration sample results. Thus,

the curve was reproduced, eliminating the two highest calibration standards. Further dilution of the high concentration results was not performed due to holding time limitations. These results are presented as ">."

TPH-DRO were reported in 27 of 28 ground-water samples at concentrations ranging from 61 μg/L (MW-213) to 10,000 μg/L (WP-22). Concentrations of TPH-DRO were reported greater than 1,000 μg/L at 6 locations: WP-02 (4,700 μg/L), WP-04 (2,000 μg/L), WP-05 (1,600 μg/L), WP-17R (2,500 μg/L), WP-21 (1,200 μg/L), and WP-22 (10,000 μg/L). A TPH-DRO concentration of 76 μg/L was reported in upgradient well MW-62, suggesting the potential for non-petroleum related hydrocarbons to be detected in the TPH-DRO analytical method. TPH-DRO was detected in 1 of 2 equipment rinsate blanks at a concentration of 290 μg/L.

The reported concentrations of total BTEX, MTBE, TPH-GRO, and TPH-DRO for the duplicate ground-water samples collected at WP-04, WP-06, and MW-44 indicated general agreement with analytical results for the original samples, with the exception of WP-06-DUP which exhibited 150 μg/L TPH-GRO result compared to the WP-06 result of <10U μg/L.

A Hach Model DR-2000 spectrometer was used for analysis of ferrous iron and manganese concentrations in the ground-water samples collected from 19 of 22 well points. Samples were not collected from well points WP-13, WP-19, and WP-20 due to well point damage. Ferrous iron concentrations ranged from 0.07 mg/L in well point WP-16R to 3.24 mg/L in WP-21. Manganese concentrations ranged from non-detect in 2 well points (WP-9 and WP-12) to 0.3 mg/L in WP-1 and WP-10. There were no spatial distribution patterns observed for ferrous iron or manganese at the site. A summary of the ferrous iron and manganese data is provided in Table 3-6.

3.3 ASSESSMENT OF BIOSPARGING SYSTEM PERFORMANCE

Indicator parameters used to assess biosparging system performance during the reporting period include: water quality indicators (including temperature, pH, conductivity, dissolved oxygen, and Eh), ground-water sampling results, and well point headspace (vapor) concentrations. It should be noted that variation in some or all (with the probable exception of methane gas and dissolved oxygen) indicator parameters, relative to the previous reporting period (June-December 1997), may be attributable to seasonal effects.

3.3.1 *In Situ* Biodegradation Conditions

Ground-water parameters and vapor monitoring data collected prior to biosparging system activation (i.e., August 1996) at the Old Navy Fuel Farm were indicative of advanced anaerobic (reduced) environmental conditions as evidenced by dissolved oxygen concentrations of less than 0.5 mg/L in 9 of 18 well points and less than 1.0 mg/L in 16 of 18 well points. Only 2 well points, WP-09 and WP-20, exhibited dissolved oxygen concentrations greater than 1.0 mg/L

(5.4 and 3.1 mg/L, respectively) during the baseline (pre-biosparging) sampling event. Anaerobic conditions prior to biosparging were also evidenced by elevated methane gas concentrations in 13 of 28 well points.

Following approximately 24 months of active biosparging, ground water throughout the Old Navy Fuel Farm remedial area exhibits characteristics representative of active *in situ* biodegradation of petroleum hydrocarbons by heterotrophic micro-organisms. The capacity of the biosparging system to effectively distribute oxygen to ground water throughout the remedial area was substantially improved as a result of equipment modifications completed prior to and during this reporting period. Additional improvements are planned during the July-December 1998 reporting period. Improved performance is evidenced by sustained elevated levels of dissolved oxygen concentrations at nearly all well point locations during periods when the system is operational. The spacial distribution of dissolved oxygen concentrations collected during the June 1998 sampling event are presented in Figure 3-5.

The pH and redox potential field indicator parameter results for ground water suggest that aerobic biodegradation conditions continue to exist in the remedial area. Ground-water pH measured during the baseline sampling event (August 1996) at the Old Navy Fuel Farm remedial area was significantly lower than pH values typical for other sites at NAS Brunswick (i.e., approximately 6.0-7.0). The average pH prior to activation of the biosparging system was 4.87. The average pH for the reporting period was 6.61. The average pH measured at well point and monitoring well locations during the June 1998 ground-water sampling event was 7.26, indicating that pH at the Old Navy Fuel Farm has increased to more typical NAS Brunswick area values.

Increased redox potential is associated with conversion to aerobic microbial processes (NFESC 1996). However, the range of redox potentials and average redox potential measured during the June 1998 sampling event (-160 to 377 mV and 124 mV, respectively) was still below values typical in environments where engineered aerobic biodegradation has been fully established (usually greater than 750 mV, normalized for pH of 7 and temperature of 25°C).

Concurrent with activation of the biosparging system in August 1996, methane gas was detected at 13 of 20 well points at concentrations ranging from 0.1 to >90.0 percent. In June 1998, methane gas was detected in 4 of 14 well points (WP-02, WP-05, WP-07, and WP-12) at concentrations ranging from 0.1 to 2.7 percent. Well point WP-02 is not located within the effective biosparging area of influence.

The presence of elevated methane concentrations in well point riser headspace observed during the baseline sampling event (August 1996) indicates that anaerobic conditions existed throughout the Old Navy Fuel Farm biosparging area prior to the introduction of oxygen. Results of the June 1998 sampling event and well point head space monitoring (which reported significant reductions and/or elimination of methane gas) suggest that operation of the biosparging system has established aerobic biodegradation conditions throughout the biosparging area.

Figure 3-6 provides an idealized illustration of microbial ground-water environments in the vicinity of a petroleum spill resulting from preferential use of electron acceptors. Facultative bacteria (i.e., able to metabolize hydrocarbons in both aerobic and anaerobic environments) utilize available electron acceptors preferentially according to energy availability per mole, beginning with oxygen (aerobic respiration) and proceeding in order through nitrate reduction, iron reduction, sulfate reduction, and then to methanogenesis (carbon dioxide reduction). Thus, the presence of methane often suggests that all other available electron acceptors have been exhausted and/or are not able to be utilized by the indigenous microbes (NFESC 1996).

Manganese and ferric iron (Fe^{+3}) are often used as alternate electron acceptors to oxygen under anaerobic conditions. Increases in the concentrations of manganese and/or ferric iron may be indicative of reduced utilization rates associated with conversion from anaerobic to aerobic microbial activity. Based on the June 1998 sampling data, the manganese concentrations do not appear to have changed significantly during the reporting period, and were not significant indicators in previous sampling events (August 1996 - December 1997). Ferric iron is not directly measured for microbial assessments since it is not possible to quantify its availability to the microbial population without knowing its degree of crystallinity. Therefore, its reduced form, or ferrous iron (Fe^{+2}), is measured. An increase in ferrous iron concentration is an indication that iron reduction is likely occurring (NFESC 1996). Alternately, if ferrous iron concentrations are depleted, it can be inferred that dilution and/or oxidation may be taking place in the absence of continued ferrous iron production associated with anaerobic conditions. Based on the June 1998 sampling data, the ferrous iron concentrations have not changed significantly during the reporting period.

Water quality indicator parameter data, and nutrient and electron acceptor data collected during the June 1998 sampling event suggest that the environmental conditions necessary to support aerobic biodegradation are evidenced throughout the treatment area at the Old Navy Fuel Farm. Ground-water dissolved oxygen concentrations throughout the remedial area have been increased to above threshold levels (i.e., greater than 2.0 mg/L) for aerobic metabolism.

The ground water pH has stabilized above the minimum threshold for aerobic metabolism and at levels typical of the NAS Brunswick area. Similarly, the redox potential of site ground water has increased commensurate with the establishment of aerobic processes. Through the continuation of the biosparging process, dissolved oxygen, the primary electron acceptor, will remain abundant. These conditions will facilitate the aerobic degradation of petroleum constituents at the Old Navy Fuel Farm.

It should be noted that seasonal decreases in ground-water temperature (average temperature of 4.74°C, as measured 30 December 1997 through 18 March 1998) are likely to inhibit the *in situ* biodegradation process. Anticipating this effect, the biosparging system was deactivated during this period. The system was reactivated on 2 April 1998, when ground-water temperatures returned to acceptable levels (i.e., > 5.0°C).

3.3.2 Assessment of Dissolved-Phase Hydrocarbon Removal

Analytical data collected during August 1996 (baseline), December 1996, June 1997, December 1997, and June 1998 ground-water sampling events at the Old Navy Fuel Farm indicate that continued reductions in the dissolved-phase BTEX, MTBE, TPH-GRO, and TPH-DRO concentrations have occurred. Table 3-7 provides an historical summary of analytical results for the August and December 1996, June and December 1997, and June 1998 sampling events. Concentration isopleths for the June 1998 sampling event are provided on Figures 3-2 through 3-4.

The June 1998 ground-water data indicate a slight increase in total BTEX concentrations compared to the December 1997 ground-water sampling event at 12 of 19 well points (WP-1 through WP-9, WP-15, WP-18, and WP-22) and three monitoring wells (MW-51, MW-54, and MW-58). Six locations (WP-10, WP-14, MW-44, MW-61R, MW-62, and MW-213) exhibited no change in total BTEX concentrations compared to December 1997. BTEX was not detected at 7 of 28 sampling locations (WP-10, WP-14, MW-44, MW-49, MW-61R, MW-62, and MW-213). Figures 3-7 and 3-8 provide graphical illustrations of historical data trends for dissolved-phase BTEX concentrations in ground water, suggesting a seasonal pattern of higher concentrations in summer compared to winter and, despite seasonal fluctuations, an overall progressive reduction in BTEX concentrations in ground water compared to pre-remedial (baseline) ground-water data (August 1996). As indicated on Figure 3-2 (BTEX isopleth map) the two areas exhibiting the highest concentrations of dissolved-phase BTEX are localized in the vicinity of well point WP-5 in the western remedial zone, and in the vicinity of monitoring well MW-211 and well point WP-5 in the eastern remedial zone. These areas are currently the focus of ongoing biosparging system enhancements/expansion.

MTBE was undetected in site ground-water in 19 of 19 well points, and in 7 of 9 monitoring wells, for the June 1998 sampling event. Monitoring wells MW-58 and MW-61R exhibited concentrations of 4 μg/L and 5 μg/L, respectively. These results are consistent with the historical trend for this parameter since December 1996 (Table 3-7). No ground-water samples collected during June 1998 exhibited MTBE concentrations exceeding the MEDEP stringent cleanup goal.

The frequency of detection of TPH-GRO for the June 1998 sampling event remained consistent with results from the December 1997 sampling event with 22 of 28 samples exhibiting TPH-GRO compounds. Similarly, the number of samples exhibiting TPH-GRO concentrations greater than 1,000 μg/L remained consistent from December 1997 (6 of 26) to June 1998 (7 of 28). As indicated in Table 3-7, several areas of significant reduction in TPH-GRO concentrations are evident. In the eastern remedial zone, TPH-GRO concentrations in WP-4 decreased from 6,800 μg/L in December 1997 to 180 μg/L in June 1998; TPH-GRO in WP-7 decreased from 11,000 μg/L to 1,800 μg/L; TPH-GRO in MW-211 decreased from 19,000 μg/L to 4,400 μg/L; and TPH-GRO in WP-08 decreased from 560 μg/L to 70 μg/L. In the western remedial zone, TPH-GRO concentrations in WP-2 decreased from 18,000 μg/L in December 1997 to 2,400 μg/L

in June 1998; and TPH-GRO concentrations in WP-01 decreased from 140 μg/L to 45 μg/L. These order of magnitude reductions confirm a progressive trend toward reduction in site TPH-GRO concentrations in ground water.

Eight ground-water sampling locations exhibited reductions in TPH-GRO concentrations from previous (1996-1997) values above the MEDEP stringent clean-up goal of 50 μg/L, to concentrations below 50 μg/L or non-detect concentrations. These locations include WP-03, WP-09, WP-12, and MW-211 in the eastern remedial zone and WP-01, WP-15, MW-54, and MW-61R in the western remedial zone. Following the June 1998 sampling event, site-wide TPH-GRO reductions were reported in 17of 28 ground-water samples, while 6 locations reported non-detect concentrations. TPH-GRO was not detected in samples collected from perimeter monitoring wells MW-49, MW-58, MW-61R, or MW-62. Eight of 9 monitoring wells exhibited TPH-GRO concentrations below the MEDEP stringent clean-up goal of 50 μg/L. MW-211 exhibited 4,400 μg/L TPH-GRO for the June 1998 ground-water sampling event. As indicated on Figure 3-5, TPH-GRO concentrations above 1,000 μg/L were reported in the northwest, central, and southeast areas of the site with the highest concentration occurring at WP-5 (15,000 μg/L). Figures 3-9 and 10 provide graphical illustrations of historical data trends for TPH-GRO concentrations in ground water at the Old Navy Fuel Farm with the overall reductions in ground-water concentration evident since December 1996.

Twenty-six of 28 sampling locations exhibited concentrations of TPH-DRO exceeding the MEDEP Stringent clean-up goal of 50 μg/L, exceptions being MW-58 and MW-213. However, ground-water sampling results from June 1998 show continued reductions in the TPH-DRO concentrations compared to August 1996 (baseline) data. Reductions in TPH-DRO concentrations were observed in samples at 17 of 28 sampling locations compared to December 1997.

Figures 3-11 and 3-12 provide graphic illustrations of historical data trends in TPH-DRO concentrations in ground water indicating a progressive reduction since December 1996. TPH-DRO concentrations above 1,000 μg/L are exhibited in the central-eastern and northwestern remediation zones of the site. TPH-DRO were also observed in the perimeter monitoring wells (MW-49, MW-51, and MW-62) at concentrations of 130 μg/L, 64 μg/L, and 76 μg/L, respectively. The highest TPH-DRO concentration was observed at WP-22 (10,000 μg/L).

3.4 CONCLUSIONS AND RECOMMENDATIONS

Reductions in dissolved-phase hydrocarbon concentrations have been observed since the commencement of biosparging activity in 1996. The reduction may be attributable to the combined effects of volatilization and increased *in situ* biodegradation, both resulting from operation of the Old Navy Fuel Farm biosparging system. Although existing data are not sufficient to directly quantify the fraction of hydrocarbon reduction attributable to volatilization or biodegradation, inferences may be made for selected constituents based on chemical-specific vapor pressure and biodegradability. MTBE, BTEX, and TPH-GRO for which the most significant concentration reductions have been observed, are the most volatile analytes included

in the sampling program. Although BTEX compounds are known to be readily biodegradable, MTBE is generally considered to be recalcitrant (Mormile et al. 1994). Therefore, the reduction in MTBE concentration may be attributable principally to volatilization. Most MTBE removal was observed early (i.e., by December 1996) in the biosparging system operational period, an operational period favoring volatilization of compounds characterized by relatively high vapor pressure. MTBE removal during the early biosparging operational period (i.e., December 1996) was not associated with a corresponding increase in BTEX removal. Continued *in situ* biodegradation of petroleum hydrocarbons has been evidenced by significant decreases in total BTEX, TPH-GRO, and TPH-DRO concentrations throughout the remedial area.

The combined effects of volatilization and biodegradation appear to have been contributing factors in the reduction of dissolved-phase hydrocarbons from the Old Navy Fuel Farm. Less volatile compounds have persisted, but demonstrate a trend toward reduction in concentration in response to the *in situ* biosparging process now employed. With the continued effective delivery of dissolved oxygen to the shallow ground water, and continued aerobic microbial activity, it is anticipated that less volatile compounds as well as the remaining volatile constituents will undergo sustained aerobic biodegradation.

As indicated in Section 3.2.2, sustained dissolved-phase hydrocarbon removal has resulted in significant progress toward MEDEP clean-up criteria. In order to enhance the effectiveness of the biosparging system, remedial system modifications/improvements have been initiated, including:

- Expansion of the SVE/AAS network to more fully encompass the two principal areas of concern exhibiting elevated TPH-GRO and TPH-DRO.
- Installation of control valving in the existing AAS network to increase remedial efficiency.
- Performance of a 2-month dewatering pilot study to determine the potential effectiveness of localized dewatering strategy in the vicinity of the currently flooded SVE lateral trenches, potentially allowing for future SVE system operation.
- Installation of up to 6 new/replacement monitoring wells and/or well points to assist in monitoring the progress/effectiveness of the biosparging system.

System modifications will be performed during the July-December 1998 operational period. The December 1998 ground-water sampling event will incorporate data from new monitoring wells and well points, and may serve to demonstrate the effectiveness of the system enhancements now underway.

TABLE 3-1 SUMMARY OF WELL GAUGING DATA COLLECTED FROM 6 JANUARY THROUGH 30 JUNE 1998 OLD NAVY FUEL FARM, NAVAL AIR STATION BRUNSWICK, MAINE

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-1					
06 JAN 1998	74.84	4.96	4.96	0.00	69.88
22 JAN 1998	74.84	4.97	4.97	0.00	69.87
05 FEB 1998	74.84	4.80	4.80	0.00	70.04
15 FEB 1998	74.84	4.90	4.90	0.00	69.94
02 MAR 1998	74.84	3.44	3.44	0.00	71.40
18 MAR 1998	74.84	3.51	3.51	0.00	71.33
14 APR 1998	74.84	4.38	4.38	0.00	70.46
25 APR 1998	74.84	3.33	3.33	0.00	71.51
07 MAY 1998	74.84	3.29	3.29	0.00	71.55
21 MAY 1998	74.84	4.43	4.43	0.00	70.41
09 JUN 1998	74.84	4.69	4.69	0.00	70.15
16 JUN 1998	74.84	3.28	3.28	0.00	71.56
30 JUN 1998	74.84	3.59	3.59	0.00	71.25
WP-2					
06 JAN 1998	75.25	5.87	5.87	0.00	69.38
22 JAN 1998	75.25	5.92	5.92	0.00	69.33
05 FEB 1998	75.25	7.72	7.72	0.00	67.53
15 FEB 1998	75.25	5.85	5.85	0.00	69.40
02 MAR 1998	75.25	4.74	4.74	0.00	70.51
18 MAR 1998	75.25	4.86	4.86	0.00	70.39
14 APR 1998	75.25	5.33	5.33	0.00	69.92
25 APR 1998	75.25	4.00	4.00	0.00	71.25
07 MAY 1998	75.25	4.05	4.05	0.00	71.20
21 MAY 1998	75.25	5.32	5.32	0.00	69.93
09 JUN 1998	75.25	5.66	5.66	0.00	69.59
16 JUN 1998	75.25	4.02	4.02	0.00	71.23
30 JUN 1998	75.25	4.63	4.63	0.00	70.62

(a) Water table elevations in wells containing LNAPL calculated based on an assumed specific gravity of 0.83 for the LNAPL.

NOTE: LNAPL = Light, non-aqueous phase liquid; MSL = Mean sea level.
Well point WP-19 was not gauged because it was destroyed during July 1997.

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-3					
06 JAN 1998	74.16	4.91	4.91	0.00	69.25
22 JAN 1998	74.16	4.82	4.82	0.00	69.34
05 FEB 1998	74.16	4.45	4.45	0.00	69.71
15 FEB 1998	74.16	4.82	4.82	0.00	69.34
02 MAR 1998	74.16	3.39	3.39	0.00	70.77
18 MAR 1998	74.16	3.46	3.46	0.00	70.70
14 APR 1998	74.16	3.83	3.83	0.00	70.33
25 APR 1998	74.16	3.10	3.10	0.00	71.06
07 MAY 1998	74.16	2.67	2.67	0.00	71.49
21 MAY 1998	74.16	3.72	3.72	0.00	70.44
09 JUN 1998	74.16	4.35	4.35	0.00	69.81
16 JUN 1998	74.16	2.96	2.96	0.00	71.20
30 JUN 1998	74.16	3.09	3.09	0.00	71.07
WP-4					
06 JAN 1998	76.18	6.85	6.85	0.00	69.33
22 JAN 1998	76.18	6.71	6.71	0.00	69.47
05 FEB 1998	76.18	6.46	6.46	0.00	69.72
15 FEB 1998	76.18	6.65	6.65	0.00	69.53
02 MAR 1998	76.18	4.67	4.67	0.00	71.51
18 MAR 1998	76.18	4.45	4.45	0.00	71.73
14 APR 1998	76.18	4.96	4.96	0.00	71.22
25 APR 1998	76.18	4.03	4.03	0.00	72.15
07 MAY 1998	76.18	2.35	2.35	0.00	73.83
21 MAY 1998	76.18	4.82	4.82	0.00	71.36
09 JUN 1998	76.18	7.82	7.82	0.00	68.36
16 JUN 1998	76.18	2.49	2.49	0.00	73.69
30 JUN 1998	76.18	3.89	3.89	0.00	72.29
WP-5					
06 JAN 1998	74.64	5.67	5.67	0.00	68.97
22 JAN 1998	74.64	5.82	5.82	0.00	68.82
05 FEB 1998	74.64	5.58	5.58	0.00	69.06
15 FEB 1998	74.64	5.72	5.72	0.00	68.92
02 MAR 1998	74.64	5.02	5.02	0.00	69.62
18 MAR 1998	74.64	4.99	4.99	0.00	69.65
14 APR 1998	74.64	5.31	5.31	0.00	69.33
25 APR 1998	74.64	4.57	4.57	0.00	70.07
07 MAY 1998	74.64	3.30	3.30	0.00	71.34
21 MAY 1998	74.64	5.20	5.20	0.00	69.44
09 JUN 1998	74.64	5.52	5.52	0.00	69.12
16 JUN 1998	74.64	3.71	3.71	0.00	70.93
30 JUN 1998	74.64	4.75	4.75	0.00	69.89

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-6					
06 JAN 1998	73.72	4.91	4.91	0.00	68.81
22 JAN 1998	73.72	4.99	4.99	0.00	68.73
05 FEB 1998	73.72	4.65	4.65	0.00	69.07
15 FEB 1998	73.72	5.00	5.00	0.00	68.72
02 MAR 1998	73.72	3.93	3.93	0.00	69.79
18 MAR 1998	73.72	3.89	3.89	0.00	69.83
14 APR 1998	73.72	4.20	4.20	0.00	69.52
25 APR 1998	73.72	3.25	3.25	0.00	70.47
07 MAY 1998	73.72	2.32	2.32	0.00	71.40
21 MAY 1998	73.72	4.21	4.21	0.00	69.51
09 JUN 1998	73.72	4.65	4.65	0.00	69.07
16 JUN 1998	73.72	2.35	2.35	0.00	71.37
30 JUN 1998	73.72	3.51	3.51	0.00	70.21
WP-7					
06 JAN 1998	73.92	5.46	5.46	0.00	68.46
22 JAN 1998	73.92	5.65	5.65	0.00	68.27
05 FEB 1998	73.92	5.47	5.47	0.00	68.45
15 FEB 1998	73.92			Data not available (blocked)	
02 MAR 1998	73.92	4.11	4.11	0.00	69.81
18 MAR 1998	73.92	4.09	4.09	0.00	69.83
14 APR 1998	73.92	4.63	4.63	0.00	69.29
25 APR 1998	73.92	3.35	3.35	0.00	70.57
07 MAY 1998	73.92	2.80	2.80	0.00	71.12
21 MAY 1998	73.92	4.63	4.63	0.00	69.29
09 JUN 1998	73.92	5.07	5.07	0.00	68.85
16 JUN 1998	73.92	3.00	3.00	0.00	70.92
30 JUN 1998	73.92	3.73	3.73	0.00	70.19
WP-8					
06 JAN 1998	74.99	5.22	5.22	0.00	69.77
22 JAN 1998	74.99	6.42	6.42	0.00	68.57
05 FEB 1998	74.99	6.05	6.05	0.00	68.94
15 FEB 1998	74.99	6.40	6.40	0.00	68.59
02 MAR 1998	74.99	4.82	4.82	0.00	70.17
18 MAR 1998	74.99	4.50	4.50	0.00	70.49
14 APR 1998	74.99	4.94	4.94	0.00	70.05
25 APR 1998	74.99	3.36	3.36	0.00	71.63
07 MAY 1998	74.99	2.98	2.98	0.00	72.01
21 MAY 1998	74.99	5.03	5.03	0.00	69.96
09 JUN 1998	74.99	5.67	5.67	0.00	69.32
16 JUN 1998	74.99	3.03	3.03	0.00	71.96
30 JUN 1998	74.99	3.79	3.79	0.00	71.20

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-9					
06 JAN 1998	75.46	Data not available (dry)			
22 JAN 1998	75.46	Data not available (dry)			
05 FEB 1998	75.46	Data not available (dry)			
15 FEB 1998	75.46	Data not available (dry)			
02 MAR 1998	75.46	Data not available (dry)			
18 MAR 1998	75.46	6.39	6.39	0.00	69.07
14 APR 1998	75.46	6.02	6.02	0.00	69.44
25 APR 1998	75.46	5.38	5.38	0.00	70.08
07 MAY 1998	75.46	3.51	3.51	0.00	71.95
21 MAY 1998	75.46	4.78	4.78	0.00	70.68
09 JUN 1998	75.46	6.35	6.35	0.00	69.11
16 JUN 1998	75.46	3.05	3.05	0.00	72.41
30 JUN 1998	75.46	3.70	3.70	0.00	71.76
WP-10					
06 JAN 1998	74.83	5.86	5.86	0.00	68.97
22 JAN 1998	74.83	6.06	6.06	0.00	68.77
05 FEB 1998	74.83	5.65	5.65	0.00	69.18
15 FEB 1998	74.83	7.56	7.56	0.00	67.27
02 MAR 1998	74.83	4.69	4.69	0.00	70.14
18 MAR 1998	74.83	4.48	4.48	0.00	70.35
14 APR 1998	74.83	4.70	4.70	0.00	70.13
25 APR 1998	74.83	3.35	3.35	0.00	71.48
07 MAY 1998	74.83	1.60	1.60	0.00	73.23
21 MAY 1998	74.83	4.68	4.68	0.00	70.15
09 JUN 1998	74.83	5.47	5.47	0.00	69.36
16 JUN 1998	74.83	1.68	1.68	0.00	73.15
30 JUN 1998	74.83	3.65	3.65	0.00	71.18
WP-11					
06 JAN 1998	74.06	5.72	5.72	0.00	68.34
22 JAN 1998	74.06	6.06	6.06	0.00	68.00
05 FEB 1998	74.06	Data not available (frozen)			
15 FEB 1998	74.06	Data not available (frozen)			
02 MAR 1998	74.06	Data not available (dry)			
18 MAR 1998	74.06	4.68	4.68	0.00	69.38
14 APR 1998	74.06	5.06	5.06	0.00	69.00
25 APR 1998	74.06	4.73	4.73	0.00	69.33
07 MAY 1998	74.06	3.00	3.00	0.00	71.06
21 MAY 1998	74.06	4.98	4.98	0.00	69.08
09 JUN 1998	74.06	5.45	5.45	0.00	68.61
16 JUN 1998	74.06	2.99	2.99	0.00	71.07
30 JUN 1998	74.06	4.24	4.24	0.00	69.82

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-12					
06 JAN 1998	75.12	Data not available (dry)			
22 JAN 1998	75.12	Data not available (dry)			
05 FEB 1998	75.12	Data not available (dry)			
15 FEB 1998	75.12	Data not available (dry)			
02 MAR 1998	75.12	7.49	7.49	0.00	67.63
18 MAR 1998	75.12	6.48	6.48	0.00	68.64
14 APR 1998	75.12	6.53	6.53	0.00	68.59
25 APR 1998	75.12	5.48	5.48	0.00	69.64
07 MAY 1998	75.12	4.06	4.06	0.00	71.06
21 MAY 1998	75.12	6.17	6.17	0.00	68.95
09 JUN 1998	75.12	7.35	7.35	0.00	67.77
16 JUN 1998	75.12	4.31	4.31	0.00	70.81
30 JUN 1998	75.12	4.92	4.92	0.00	70.20
WP-13					
06 JAN 1998	74.34	4.61	4.61	0.00	69.73
22 JAN 1998	74.34	7.70	7.70	0.00	66.64
05 FEB 1998	74.34	Data not available (frozen)			
15 FEB 1998	74.34	Data not available (unable to open)			
02 MAR 1998	74.34	4.19	4.19	0.00	70.15
18 MAR 1998	74.34	4.57	4.57	0.00	69.77
14 APR 1998	74.34	4.98	4.98	0.00	69.36
25 APR 1998	74.34	3.76	3.76	0.00	70.58
07 MAY 1998	74.34	2.36	2.36	0.00	71.98
21 MAY 1998	74.34	4.46	4.46	0.00	69.88
09 JUN 1998	74.34	5.81	5.81	0.00	68.53
16 JUN 1998	74.34	Data not available (bent casing)			
30 JUN 1998	74.34	Data not available (bent casing)			
WP-14					
06 JAN 1998	75.18	6.52	6.52	0.00	68.66
22 JAN 1998	75.18	6.63	6.63	0.00	68.55
05 FEB 1998	75.18	Data not available (frozen)			
15 FEB 1998	75.18	Data not available (frozen)			
02 MAR 1998	75.18	4.25	4.25	0.00	70.93
18 MAR 1998	75.18	5.12	5.12	0.00	70.06
14 APR 1998	75.18	5.41	5.41	0.00	69.77
25 APR 1998	75.18	4.59	4.59	0.00	70.59
07 MAY 1998	75.18	2.69	2.69	0.00	72.49
21 MAY 1998	75.18	5.36	5.36	0.00	69.82
09 JUN 1998	75.18	6.07	6.07	0.00	69.11
16 JUN 1998	75.18	2.82	2.82	0.00	72.36
30 JUN 1998	75.18	4.44	4.44	0.00	70.74

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-15					
06 JAN 1998	74.54	6.32	6.32	0.00	68.22
22 JAN 1998	74.54	6.58	6.58	0.00	67.96
05 FEB 1998	74.54	8.00	8.00	0.00	66.54
15 FEB 1998	74.54	6.35	6.35	0.00	68.19
02 MAR 1998	74.54	5.05	5.05	0.00	69.49
18 MAR 1998	74.54	4.92	4.92	0.00	69.62
14 APR 1998	74.54	5.32	5.32	0.00	69.22
25 APR 1998	74.54	5.00	5.00	0.00	69.54
07 MAY 1998	74.54	3.15	3.15	0.00	71.39
21 MAY 1998	74.54	5.25	5.25	0.00	69.29
09 JUN 1998	74.54	5.93	5.93	0.00	68.61
16 JUN 1998	74.54	3.16	3.16	0.00	71.38
30 JUN 1998	74.54	4.41	4.41	0.00	70.13
WP-16R					
22 JAN 1998	73.33		Data not available (frozen)		
05 FEB 1998	73.33		Data not available (frozen)		
15 FEB 1998	73.33		Data not available (frozen)		
02 MAR 1998	73.33	8.49	---	---	64.84
18 MAR 1998	73.33	6.55	---	---	66.78
07 MAY 1998	73.33	4.13	---	---	69.20
21 MAY 1998	73.33	5.54	---	---	67.79
09 JUN 1998	73.33	7.28	---	---	66.05
16 JUN 1998	73.33	4.02	---	---	69.31
30 JUN 1998	73.33	4.26	---	---	69.07
WP-17R					
22 JAN 1998	74.74	8.70	---	---	66.04
05 FEB 1998	74.74		Data not available (frozen)		
15 FEB 1998	74.74		Data not available (frozen)		
02 MAR 1998	74.74	2.61	---	---	72.13
18 MAR 1998	74.74	6.80	---	---	67.94
07 MAY 1998	74.74	4.11	---	---	70.63
21 MAY 1998	74.74	6.27	---	---	68.47
09 JUN 1998	74.74	7.60	---	---	67.14
16 JUN 1998	74.74	4.80	---	---	69.94
30 JUN 1998	74.74	5.18	---	---	69.56

NOTE: Dashes (---) indicate small diameter well point; inaccessible by oil/water interface probe.

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-18R					
22 JAN 1998	74.81	Data not available (frozen)			
05 FEB 1998	74.81	Data not available (frozen)			
15 FEB 1998	74.81	Data not available (frozen)			
18 MAR 1998	74.81	5.46	---	---	69.35
07 MAY 1998	74.81	2.41	---	---	72.40
21 MAY 1998	74.81	5.35	---	---	69.46
09 JUN 1998	74.81	6.18	---	---	68.63
16 JUN 1998	74.81	2.35	---	---	72.46
30 JUN 1998	74.81	4.49	---	---	70.32
WP-20					
06 JAN 1998	72.67	6.02	6.02	0.00	66.65
22 JAN 1998	72.67	6.44	6.44	0.00	66.23
05 FEB 1998	72.67	6.45	6.45	0.00	66.22
15 FEB 1998	72.67	6.00	6.00	0.00	66.67
02 MAR 1998	72.67	4.57	4.57	0.00	68.10
18 MAR 1998	72.67	4.98	4.98	0.00	67.69
14 APR 1998	72.67	5.43	5.43	0.00	67.24
25 APR 1998	72.67	3.98	3.98	0.00	68.69
07 MAY 1998	72.67	3.20	3.20	0.00	69.47
21 MAY 1998	72.67	5.09	5.09	0.00	67.58
09 JUN 1998	72.67	Well point destroyed			
16 JUN 1998	72.67	Well point destroyed			
30 JUN 1998	72.67	Well point destroyed			
WP-21					
22 JAN 1998	75.77	6.95	6.95	0.00	68.82
05 FEB 1998	75.77	Data not available (frozen)			
15 FEB 1998	75.77	Data not available (frozen)			
02 MAR 1998	75.77	Data not available (frozen)			
18 MAR 1998	75.77	6.05	---	---	69.72
07 MAY 1998	75.77	6.31	---	---	69.46
21 MAY 1998	75.77	5.64	---	---	70.13
09 JUN 1998	75.77	6.33	---	---	69.44
16 JUN 1998	75.77	4.96	---	---	70.81
30 JUN 1998	75.77	4.85	---	---	70.92

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
WP-22					
22 JAN 1998	76.10	7.78	---	---	68.32
05 FEB 1998	76.10	Data not available (frozen)			
15 FEB 1998	76.10	Data not available (frozen)			
02 MAR 1998	76.10	Data not available (blocked)			
18 MAR 1998	76.10	5.74	---	---	70.36
07 MAY 1998	76.10	4.18	---	---	71.92
21 MAY 1998	76.10	6.00	---	---	70.10
09 JUN 1998	76.10	6.73	---	---	69.37
16 JUN 1998	76.10	3.89	---	---	72.21
30 JUN 1998	76.10	4.68	---	---	71.42
MW-43					
06 JAN 1998	73.88	Data not available (dry)			
22 JAN 1998	73.88	Data not available (dry)			
05 FEB 1998	73.88	Data not available (dry)			
15 FEB 1998	73.88	Data not available (dry)			
02 MAR 1998	73.88	6.74	6.74	0.00	67.14
18 MAR 1998	73.88	6.17	6.17	0.00	67.71
14 APR 1998	73.88	4.54	4.54	0.00	69.34
25 APR 1998	73.88	3.79	3.79	0.00	70.09
20 MAY 1998	73.88	6.18	6.18	0.00	67.70
09 JUN 1998	73.88	Data not available (dry)			
16 JUN 1998	73.88	4.05	4.05	0.00	69.83
30 JUN 1998	73.88	5.51	5.51	0.00	68.37
MW-44					
06 JAN 1998	73.18	3.59	3.59	0.00	69.59
22 JAN 1998	73.18	3.55	3.55	0.00	69.63
05 FEB 1998	73.18	3.35	3.35	0.00	69.83
15 FEB 1998	73.18	3.47	3.47	0.00	69.71
02 MAR 1998	73.18	8.88	8.88	0.00	64.30
18 MAR 1998	73.18	2.56	2.56	0.00	70.62
14 APR 1998	73.18	2.81	2.81	0.00	70.37
25 APR 1998	73.18	2.05	2.05	0.00	71.13
07 MAY 1998	73.18	1.66	1.66	0.00	71.52
20 MAY 1998	73.18	2.81	2.81	0.00	70.37
09 JUN 1998	73.18	3.55	3.55	0.00	69.63
16 JUN 1998	73.18	1.78	1.78	0.00	71.40
30 JUN 1998	73.18	2.07	2.07	0.00	71.11

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
MW-46[b]					
15 FEB 1998	71.02	5.32	5.32	0.00	65.70
20 MAY 1998	71.02	4.14	4.14	0.00	66.88
MW-49					
06 JAN 1998	66.97	5.81	5.81	0.00	61.16
22 JAN 1998	66.97	5.83	5.83	0.00	61.14
15 FEB 1998	66.97	5.58	5.58	0.00	61.39
02 MAR 1998	66.97	5.56	5.56	0.00	61.41
18 MAR 1998	66.97	5.57	5.57	0.00	61.40
14 APR 1998	66.97	5.71	5.71	0.00	61.26
25 APR 1998	66.97	5.61	5.61	0.00	61.36
07 MAY 1998	66.97	4.07	4.0 7	0.00	62.90
20 MAY 1998	66.97	5.72	5.72	0.00	61.25
09 JUN 1998	66.97	5.91	5.91	0.00	61.06
16 JUN 1998	66.97	4.60	4.60	0.00	62.37
30 JUN 1998	66.97	5.50	5.50	0.00	61.47
MW-51					
06 JAN 1998	73.20	5.62	5.62	0.00	67.58
22 JAN 1998	73.20	5.07	5.07	0.00	68.13
05 FEB 1998	73.20	5.10	5.10	0.00	68.10
15 FEB 1998	73.20	Data not available (frozen)			
02 MAR 1998	73.20	3.86	3.86	0.00	69.34
18 MAR 1998	73.20	3.94	3.94	0.00	69.26
14 APR 1998	73.20	4.21	4.21	0.00	68.99
25 APR 1998	73.20	4.03	4.03	0.00	69.17
07 MAY 1998	73.20	2.95	2.95	0.00	70.25
20 MAY 1998	73.20	4.05	4.05	0.00	69.15
09 JUN 1998	73.20	4.73	4.73	0. 00	68.47
16 JUN 1998	73.20	3.15	3.15	0.00	70.05
30 JUN 1998	73.20	3.45	3.45	0.00	69.75

(b) Gauging performed at MW-46 in February and May only. MW-49 substituted as alternate downgradient gauging point for MW-46.

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
MW-54					
06 JAN 1998	75.49	6.74	6.74	0.00	68.75
22 JAN 1998	75.49	6.75	6.75	0.00	68.74
05 FEB 1998	75.49	6.52	6.52	0.00	68.97
15 FEB 1998	75.49	6.30	6.30	0.00	69.19
02 MAR 1998	75.49	5.32	5.32	0.00	70.17
18 MAR 1998	75.49	5.41	5.41	0.00	70.08
14 APR 1998	75.49	5.65	5.65	0. 00	69.84
25 APR 1998	75.49	4.40	4.40	0.00	71.09
07 MAY 1998	75.49	2.90	2.90	0.00	72.59
20 MAY 1998	75.49	5.52	5.52	0.00	69.97
09 JUN 1998	75.49	6.32	6.32	0.00	69.17
16 JUN 1998	75.49	3.05	3.05	0.00	72.44
30 JUN 1998	75.49	4.57	4.57	0.00	70.92
MW-58					
06 JAN 1998	69.80	6.22	6.22	0.00	63.58
22 JAN 1998	69.80	6.15	6.15	0.00	63.65
005 FEB 1998	69.80	6.20	6.20	0.00	63.60
15 FEB 1998	69.80	6.05	6.05	0.00	63.75
02 MAR 1998	69.80	8.78	8.78	0.00	61.02
18 MAR 1998	69.80	5.73	5.73	0.00	64.07
14 APR 1998	69.80	5.94	5.94	0.00	63.86
25 APR 1998	69.80	4.32	4.32	0.00	65.48
07 MAY 1998	69.80	5.50	5.50	0.00	64.30
20 MAY 1998	69.80	5.84	5.84	0.00	63.96
09 JUN 1998	69.80	6.10	6.10	0.00	63.70
16 JUN 1998	69.80	5.55	5.55	0.00	64.25
30 JUN 1998	69.80	5.74	5.74	0.00	64.06
MW-61R					
06 JAN 1998	75.52	5.09	5.09	0.00	70.43
22 JAN 1998	75.52	5.22	5.22	0.00	70.3
05 FEB 1998	75.52	4.97	4.97	0.00	70.55
15 FEB 1998	75.52	5.05	5.05	0.00	70.47
02 MAR 1998	75.52	3.70	3.70	0.00	71.82
18 MAR 1998	75.52	3.46	3.46	0.00	72.06
14 APR 1998	75.52	4.41	4.41	0.00	71.11
25 APR 1998	75.52	3.55	3.55	0.00	71.97
07 MAY 1998	75.52	3.35	3.35	0.00	72.17
20 MAY 1998	75.52	4.49	4.49	0.00	71.03
09 JUN 1998	75.52	4.81	4.81	0.00	70.71
16 JUN 1998	75.52	3.37	3.37	0.00	72.15
30 JUN 1998	75.52	3.87	3.87	0.00	71.65

Gauging Data	Well Elevation (ft MSL)	Depth to Water (ft)	Depth to LNAPL (ft)	LNAPL Thickness (ft)	Water Table Elevation (ft)[a]
MW-62					
06 JAN 1998	80.78	9.35	9.35	0.00	71.43
22 JAN 1998	80.78	9.85	9.85	0.00	70.93
05 FEB 1998	80.78	8.82	8.82	0.00	71.96
15 FEB 1998	80.78	8.40	8.40	0.00	72.38
02 MAR 1998	80.78	7.75	7.75	0.00	73.03
18 MAR 1998	80.78	8.02	8.02	0.00	72.76
14 APR 1998	80.78	8.35	8.35	0.00	72.43
25 APR 1998	80.78	6.97	6.97	0.00	73.81
07 MAY 1998	80.78	7.59	7.59	0.00	73.19
20 MAY 1998	80.78	8.20	8.20	0.00	72.58
09 JUN 1998	80.78	8.92	8.92	0.00	71.86
16 JUN 1998	80.78	7.71	7.71	0.00	73.07
30 JUN 1998	80.78	7.97	7.97	0.00	72.81
MW-NASB-211					
06 JAN 1998	75.55	7.93	7.93	0.00	67.62
22 JAN 1998	75.55	8.73	8.73	0.00	66.82
05 FEB 1998	75.55	7.25	7.25	0.00	68.3
15 FEB 1998	75.55	8.40	8.40	0.00	67.15
02 MAR 1998	75.55	7.00	7.00	0.00	68.55
18 MAR 1998	75.55	6.22	6.22	0.00	69.33
14 APR 1998	75.55	6.32	6.32	0.00	69.23
25 APR 1998	75.55	5.72	5.72	0.00	69.83
07 MAY 1998	75.55	4.26	4.26	0.00	71.29
20 MAY 1998	75.55	6.15	6.15	0.00	69.4
09 JUN 1998	75.55	7.19	7.19	0.00	68.36
16 JUN 1998	75.55	3.89	3.89	0.00	71.66
30 JUN 1998	75.55	4.95	4.95	0.00	70.60
MW-NASB-213					
06 JAN 1998	76.81	7.55	7.55	0.00	69.26
22 JAN 1998	76.81	6.89	6.89	0.00	69.92
05 FEB 1998	76.81	6.70	6.70	0.00	70.11
15 FEB 1998	76.81	6.45	6.45	0.00	70.36
02 MAR 1998	76.81	5.99	5.99	0.00	70.82
18 MAR 1998	76.81	4.44	4.44	0.00	72.37
14 APR 1998	76.81	4.99	4.99	0.00	71.82
25 APR 1998	76.81	4.35	4.35	0.00	72.46
07 MAY 1998	76.81	3.30	3.30	0.00	73.51
20 MAY 1998	76.81	4.58	4.58	0.00	72.23
09 JUN 1998	76.81	5.75	5.75	0.00	71.06
16 JUN 1998	76.81	4.01	4.01	0.00	72.80
30 JUN 1998	76.81	4.18	4.18	0.00	72.63

TABLE 3-2 SUMMARY OF WATER QUALITY INDICATOR PARAMETER MEASUREMENTS COLLECTED FROM 6 JANUARY THROUGH 30 JUNE 1998 OLD NAVY FUEL FARM, NAVAL AIR STATION, BRUNSWICK, MAINE

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
WP-1					
06 JAN 1998	5.49	4.85	5.56	187	204
22 JAN 1998	5.74	3.13	5.09	218	140
05 FEB 1998	5.59	4.20	7.43	338	146
15 FEB 1998	5.56	3.39	2.21	291	180
02 MAR 1998	5.68	1.27	9.27	239	189
18 MAR 1998	6.08	0.60	9.75	160	168
14 APR 1998	5.65	5.57	5.79	265	158
25 APR 1998	5.94	8.75	3.11	88	185
07 MAY 1998	5.96	11.63	8.12	202	223
21 MAY 1998	5.76	10.60	0.41	284	160
09 JUN 1998	5.69	14.18	1.01	393	-4
16 JUN 1998	6.80	15.45	2.60	137	212
30 JUN 1998	6.21	18.51	5.42	181	136
WP-2					
06 JAN 1998	5.83	3.15	5.28	96	194
22 JAN 1998	5.93	3.28	5.49	117	176
05 FEB 1998	5.89	3.33	5.38	103	144
15 FEB 1998	6.32	2.79	3.89	22	141
02 MAR 1998	5.62	2.65	5.86	94	215
18 MAR 1998	6.08	2.12	9.55	85	199
14 APR 1998	5.95	6.17	6.02	140	143
25 APR 1998	5.95	8.81	3.39	176	154
07 MAY 1998	6.04	11.95	8.34	97	199
21 MAY 1998	6.09	11.13	0.79	148	161
09 JUN 1998	5.79	13.66	1.83	156	27
16 JUN 1998	6.86	16.06	3.62	65	172
30 JUN 1998	6.02	17.05	4.05	208	121

NOTE: LNAPL = Light, non-aqueous phase liquid; MSL = Mean sea level.

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
WP-3					
06 JAN 1998	5.69	5.37	5.81	39	162
22 JAN 1998	5.47	4.88	2.86	49	181
05 FEB 1998	5.45	4.63	5.22	43	167
15 FEB 1998	5.60	4.22	3.13	43	176
02 MAR 1998	6.46	1.63	10.97	31	183
18 MAR 1998	6.15	2.95	6.45	46	185
14 APR 1998	5.72	5.67	6.26	47	171
25 APR 1998	6.01	8.32	4.98	45	180
07 MAY 1998	5.98	11.32	8.85	58	206
21 MAY 1998	5.51	12.16	1.13	48	195
09 JUN 1998	5.64	13.94	4.58	56	90
16 JUN 1998	6.88	15.52	4.73	50	174
30 JUN 1998	6.15	15.64	3.20	61	105
WP-4					
06 JAN 1998	6.13	5.39	6.92	120	173
22 JAN 1998	6.19	4.53	2.81	178	141
05 FEB 1998	5.82	3.90	7.05	158	114
15 FEB 1998	5.89	3.02	2.87	145	70
02 MAR 1998	5.67	1.75	9.84	105	191
18 MAR 1998	6.49	3.19	10.39	94	250
14 APR 1998	5.76	6.54	7.00	115	152
25 APR 1998	5.86	7.53	5.97	91	150
07 MAY 1998	6.45	11.92	8.35	48	212
21 MAY 1998	5.88	10.29	0.62	138	191
09 JUN 1998	5.86	12.73	0.51	193	-2
16 JUN 1998	6.61	16.01	3.41	62	122
30 JUN 1998	6.25	18.35	3.98	122	107
WP-5					
06 JAN 1998	5.18	5.74	6.28	29	201
22 JAN 1998	5.38	5.57	3.69	63	217
05 FEB 1998	5.42	4.70	6.06	77	144
15 FEB 1998	5.42	4.37	4.94	75	194
02 MAR 1998	5.65	4.58	5.05	86	194
18 MAR 1998	5.99	4.37	7.83	88	167
14 APR 1998	5.50	6.13	2.92	83	171
25 APR 1998	5.90	7.03	6.87	79	233
07 MAY 1998	6.27	11.66	10.14	38	194
21 MAY 1998	5.50	8.98	0.77	70	178
09 JUN 1998	5.76	11.61	2.05	91	35
16 JUN 1998	6.90	16.21	6.88	36	169
30 JUN 1998	6.34	14.18	3.54	64	186

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
WP-6					
06 JAN 1998	5.87	5.46	6.98	32	191
22 JAN 1998	5.55	4.74	3.31	77	149
05 FEB 1998	5.72	4.55	4.47	70	147
15 FEB 1998	5.68	4.36	3.56	76	140
02 MAR 1998	5.30	3.16	6.10	72	229
18 MAR 1998	6.38	2.54	8.78	45	175
14 APR 1998	5.85	4.94	5.05	50	164
25 APR 1998	5.74	6.88	5.00	53	184
07 MAY 1998	6.12	11.70	9.52	28	191
21 MAY 1998	5.69	8.38	0.43	51	174
09 JUN 1998	5.6	11.27	1.83	82	68
16 JUN 1998	6.85	15.49	4.27	25	175
30 JUN 1998	6.41	16.20	4.20	39	89
WP-7					
06 JAN 1998	5.69	3.6	6.12	93	78
22 JAN 1998	5.83	3.61	2.9	193	59
05 FEB 1998			Data not available (blocked)		
15 FEB 1998			Data not available (blocked)		
02 MAR 1998	6.11	0.99	6.04	89	199
18 MAR 1998	6.40	1.53	9.67	104	174
14 APR 1998	5.74	6.15	7.00	240	107
25 APR 1998	5.79	8.29	2.05	165	177
07 MAY 1998	6.05	12.02	9.15	116	227
21 MAY 1998	5.74	12.06	0.84	240	179
09 JUN 1998	5.74	12.51	1.48	250	-19
16 JUN 1998	6.65	14.33	3.45	123	175
30 JUN 1998	6.09	17.9	2.90	204	112
WP-8					
06 JAN 1998	6.01	4.74	5.28	167	172
22 JAN 1998	6.04	3.78	6.69	224	187
05 FEB 1998	5.66	3.19	12.79	189	100
15 FEB 1998	5.61	2.85	8.48	105	191
02 MAR 1998	6.28	3.25	9.73	91	186
18 MAR 1998	6.21	3.24	10.95	162	175
14 APR 1998	5.69	5.97	11.68	188	169
25 APR 1998	5.66	8.00	9.67	179	160
07 MAY 1998	6.09	11.40	11.19	235	229
21 MAY 1998	6.02	10.38	0.57	300	173
09 JUN 1998	5.90	13.36	2.33	382	90
16 JUN 1998	6.55	13.84	1.96	221	146
30 JUN 1998	6.02	16.91	2.22	293	114

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
WP-9					
06 JAN 1998			Data not available (dry)		
22 JAN 1998			Data not available (dry)		
05 FEB 1998			Data not available (dry)		
15 FEB 1998			Data not available (dry)		
02 MAR 1998			Data not available (dry)		
18 MAR 1998	6.44	4.37	9.66	126	252
14 APR 1998	6.00	6.59	9.17	157	169
25 APR 1998	6.09	8.31	7.35	108	153
07 MAY 1998	6.24	10.13	11.16	120	223
21 MAY 1998	5.99	11.27	4.45	138	183
09 JUN 1998	5.88	13.13	4.67	212	82
16 JUN 1998	6.48	15.97	8.24	113	127
30 JUN 1998	6.24	16.58	5.36	147	112
WP-10					
06 JAN 1998	5.05	7.98	6.58	58	204
22 JAN 1998	5.04	6.56	3.86	70	253
05 FEB 1998	5.86	6.24	6.26	64	156
15 FEB 1998	5.37	5.22	6.79	66	253
02 MAR 1998	5.53	5.46	6.81	41	197
18 MAR 1998	7.02	2.15	11.50	28	249
14 APR 1998	5.60	5.71	2.36	58	173
25 APR 1998	6.18	7.41	6.67	60	314
07 MAY 1998	6.52	11.86	9.00	29	227
21 MAY 1998	6.54	8.70	1.50	60	253
09 JUN 1998	5.31	10.13	2.73	78	181
16 JUN 1998	6.91	16.34	5.49	31	254
30 JUN 1998	6.82	18.08	5.70	40	187
WP-11					
06 JAN 1998	5.58	4.36	6.91	53	208
22 JAN 1998	5.92	4.20	4.34	54	127
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
02 MAR 1998			Data not available (dry)		
18 MAR 1998	6.66	2.38	11.05	60	248
14 APR 1998	6.02	5.82	7.73	90	165
25 APR 1998	6.37	7.53	6.39	105	173
07 MAY 1998	6.09	11.95	8.58	62	224
21 MAY 1998	5.94	10.18	0.52	107	154
09 JUN 1998	5.75	12.76	0.62	144	-13
16 JUN 1998	6.75	15.75	2.23	69	189
30 JUN 1998	6.08	17.30	5.13	129	116

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
WP-12					
06 JAN 1998			Data not available (dry)		
22 JAN 1998			Data not available (dry)		
05 FEB 1998			Data not available (dry)		
15 FEB 1998			Data not available (dry)		
02 MAR 1998	5.77	4.04	7.09	39	175
18 MAR 1998	6.50	3.18	11.10	85	252
14 APR 1998	6.34	5.77	1.71	82	143
25 APR 1998	5.98	6.97	2.76	78	120
07 MAY 1998	6.35	11.74	10.44	39	221
21 MAY 1998	5.71	10.40	0.40	127	198
09 JUN 1998	5.73	13.35	4.01	141	73
16 JUN 1998	6.29	15.78	3.27	108	126
30 JUN 1998	5.86	16.96	3.15	174	145
WP-13					
06 JAN 1998	6.27	1.24	9.89	41	174
22 JAN 1998			Data not available (frozen)		
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
02 MAR 1998	5.99	1.77	7.19	47	186
18 MAR 1998	6.66	2.61	5.02	36	247
14 APR 1998	6.16	6.21	1.54	45	152
25 APR 1998	6.38	8.31	1.79	50	180
07 MAY 1998	6.74	11.78	7.93	49	221
21 MAY 1998	6.45	10.97	0.58	63	167
09 JUN 1998	6.17	13.50	3.58	74	67
16 JUN 1998			Data not available (bent casing)		
30 JUN 1998			Data not available (bent casing)		
WP-14					
06 JAN 1998	7.03	6.27	9.12	19	153
22 JAN 1998	5.53	4.66	3.17	67	207
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
02 MAR 1998	5.40	3.96	3.01	168	186
18 MAR 1998	6.88	2.53	11.79	40	246
14 APR 1998	5.88	6.21	2.39	117	183
25 APR 1998	5.97	7.78	3.01	137	120
07 MAY 1998	8.66	11.33	7.01	51	167
21 MAY 1998	5.67	10.70	0.80	104	212
09 JUN 1998	5.78	12.40	2.37	146	170
16 JUN 1998	6.95	16.23	6.82	56	257
30 JUN 1998	6.96	17.35	5.33	72	183

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
WP-15					
06 JAN 1998	5.89	5.09	6.96	26	193
22 JAN 1998	5.65	4.66	5.82	78	166
05 FEB 1998	5.98	4.11	9.33	69	187
15 FEB 1998	5.80	3.36	---	68	222
02 MAR 1998	5.89	3.35	5.04	73	212
18 MAR 1998	6.75	2.92	11.86	63	249
14 APR 1998	5.81	6.67	6.29	61	151
25 APR 1998	5.43	6.98	4.38	50	157
07 MAY 1998	6.22	11.29	10.72	42	219
21 MAY 1998	6.04	11.31	9.47	54	170
09 JUN 1998	5.77	12.70	8.66	73	109
16 JUN 1998	6.89	15.05	9.31	47	181
30 JUN 1998	6.36	16.58	9.62	41	98
WP-16R					
22 JAN 1998			Data not available (frozen)		
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
02 MAR 1998	11.94	7.47	11.76	413	2.5
18 MAR 1998	7.99	5.36	9.60	157	116
07 MAY 1998	10.03	11.24	10.39	269	123
21 MAY 1998	9.54	12.13	1.37	344	64
09 JUN 1998	6.41	14.10	3.86	465	100
16 JUN 1998	8.81	11.87	2.53	391	60
30 JUN 1998	8.90	14.12	6.64	432	83
WP-17R					
22 JAN 1998			Data not available (frozen)		
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
02 MAR 1998			Data not available (insufficient water)		
18 MAR 1998	8.80	4.92	9.61	94	114
07 MAY 1998	5.78	10.05	8.16	105	233
21 MAY 1998	9.38	13.54	2.08	143	77
09 JUN 1998	5.97	15.71	6.63	81	122
16 JUN 1998	6.53	12.37	2.84	140	28
30 JUN 1998	6.08	13.79	8.69	178	176

NOTE: Dashes (---) indicate data unavailable due to field instrument problem.

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
WP-18R					
22 JAN 1998			Data not available (frozen)		
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
18 MAR 1998	8.98	5.15	12.56	79	113
07 MAY 1998	9.21	11.29	11.63	134	136
21 MAY 1998	6.62	16.12	9.74	168	176
09 JUN 1998	7.13	16.28	9.90	202	1
16 JUN 1998	6.54	14.07	10.61	156	195
30 JUN 1998	7.64	11.87	9.47	166	-72
WP-20					
06 JAN 1998	6.36	1.57	10.12	32	174
22 JAN 1998	6.12	2.48	10.58	249	181
05 FEB 1998	6.00	2.10	10.60	214	175
15 FEB 1998	6.03	1.62	10.50	61	178
02 MAR 1998	6.00	2.02	8.66	71	194
18 MAR 1998	6.77	2.27	11.22	40	234
14 APR 1998	5.81	6.10	4.77	477	176
25 APR 1998	6.71	8.31	3.99	397	180
07 MAY 1998	6.17	11.30	9.97	68	233
21 MAY 1998	6.06	12.01	3.12	392	184
09 JUN 1998			Well point destroyed		
16 JUN 1998			Well point destroyed		
30 JUN 1998			Well point destroyed		
WP-21					
22 JAN 1998			Data not available (frozen)		
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
02 MAR 1998			Data not available (blocked)		
18 MAR 1998	6.90	5.78	9.93	41	145
07 MAY 1998	9.70	10.60	9.10	34	121
21 MAY 1998	6.10	12.18	2.92	146	182
09 JUN 1998	7.50	12.56	3.76	186	-92
16 JUN 1998	6.08	12.60	2.51	101	136
30 JUN 1998	8.27	13.90	6.55	209	-160
WP-22					
22 JAN 1998			Data not available (frozen)		
05 FEB 1998			Data not available (frozen)		
15 FEB 1998			Data not available (frozen)		
02 MAR 1998			Data not available (blocked)		
18 MAR 1998	9.02	4.40	8.83	110	101
07 MAY 1998	10.33	10.68	7.01	485	95
21 MAY 1998	11.40	15.50	3.07	1,067	-34
09 JUN 1998	11.24	12.95	2.77	1,292	-68
16 JUN 1998	11.25	12.61	3.00	1,041	-51
30 JUN 1998	10.43	14.3	4.96	1,080	296

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
MW-43					
06 JAN 1998			Data not available (dry)		
22 JAN 1998			Data not available (dry)		
05 FEB 1998			Data not available (dry)		
15 FEB 1998			Data not available (dry)		
02 MAR 1998	---	2.37	11.67	28	49
18 MAR 1998	6.68	2.50	13.42	---	237
14 APR 1998	6.11	4.84	3.26	191	172
25 APR 1998	6.20	7.79	3.78	142	180
20 MAY 1998	5.74	12.01	1.07	21	197
09 JUN 1998			Data not available (dry)		
16 JUN 1998	6.61	15.49	9.82	29	163
30 JUN 1998	6.25	17.34	8.92	39	133
MW-44					
06 JAN 1998	5.80	4.91	5.68	51	188
22 JAN 1998	5.97	4.95	3.51	71	127
05 FEB 1998	5.75	4.75	5.35	62	131
15 FEB 1998	5.92	4.68	3.28	61	159
02 MAR 1998	8.67	7.63	5.23	259	120
18 MAR 1998	6.21	1.86	5.46	38	196
14 APR 1998	6.08	5.94	5.49	43	140
25 APR 1998	6.26	7.76	4.96	42	150
07 MAY 1998	6.28	7.45	7.27	47	183
20 MAY 1998	6.81	11.19	1.40	47	180
09 JUN 1998	6.13	14.11	4.04	60	59
16 JUN 1998	6.96	15.75	5.54	54	165
30 JUN 1998	6.61	18.47	6.59	58	79
MW-46					
15 FEB 1998	6.00	3.72	---	181	193
20 MAY 1998	6.01	8.46	1.2	213	202
MW-49					
06 JAN 1998	6.39	7.09	7.21	63	230
22 JAN 1998	6.07	6.79	6.41	72	187
15 FEB 1998	6.44	5.39	---	51	181
02 MAR 1998	8.01	6.24	4.79	53	126
18 MAR 1998	6.64	4.46	6.98	39	244
14 APR 1998	6.12	5.90	2.99	76	158
25 APR 1998	6.38	5.74	3.61	72	198
07 MAY 1998	5.79	7.27	1.63	54	222
20 MAY 1998	5.73	8.27	1.01	64	211
09 JUN 1998	5.68	10.65	1.81	92	120
16 JUN 1998	6.69	12.72	3.77	71	156
30 JUN 1998	6.11	14.17	5.82	101	164

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
MW-51					
06 JAN 1998	7.24	7.06	6.88	55	199
22 JAN 1998	6.38	5.30	5.70	68	176
05 FEB 1998	6.12	4.93	3.76	57	174
15 FEB 1998	Data not available (frozen)				
02 MAR 1998	7.61	2.38	8.73	52	136
18 MAR 1998	6.73	2.36	12.82	32	245
14 APR 1998	6.53	5.05	3.13	38	151
25 APR 1998	5.48	7.35	4.72	34	187
07 MAY 1998	6.56	9.56	11.1	27	200
20 MAY 1998	6.09	7.88	1.34	53	198
09 JUN 1998	6.36	12.61	9.63	41	97
16 JUN 1998	7.12	13.41	9.26	40	134
30 JUN 1998	6.18	14.91	7.00	56	129
MW-54					
06 JAN 1998	4.95	6.62	6.51	83	209
22 JAN 1998	5.83	7.55	2.47	100	228
05 FEB 1998	7.20	7.69	3.05	163	182
15 FEB 1998	5.79	4.33	10.30	39	377
02 MAR 1998	6.47	5.48	7.31	57	144
18 MAR 1998	7.87	3.87	10.04	45	232
14 APR 1998	6.87	6.29	2.88	75	226
25 APR 1998	6.85	8.12	7.78	71	291
07 MAY 1998	7.08	10.91	10.28	68	216
20 MAY 1998	4.88	8.80	3.14	85	242
09 JUN 1998	6.54	13.03	6.49	120	257
16 JUN 1998	6.96	15.84	5.33	104	261
30 JUN 1998	7.54	16.43	6.14	87	168
MW-56R					
06 JAN 1998	Data not available (blocked)				
22 JAN 1998	Data not available (blocked)				
05 FEB 1998	Data not available (blocked)				
15 FEB 1998	Data not available (blocked)				
02 MAR 1998	Data not available (blocked)				
18 MAR 1998	Data not available (blocked)				
20 MAY 1998	Data not available (blocked)				
09 JUN 1998	Data not available (sparging)				

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
MW-58					
06 JAN 1998	6.37	7.69	5.84	38	216
22 JAN 1998	6.14	6.87	5.26	49	181
05 FEB 1998	6.11	6.78	5.44	41	184
15 FEB 1998	6.24	6.25	---	42	189
02 MAR 1998	7.90	5.80	7.23	43	120
18 MAR 1998	6.70	5.54	8.90	44	239
14 APR 1998	6.18	6.42	5.29	45	146
25 APR 1998	5.98	6.97	4.78	87	123
07 MAY 1998	5.98	8.12	1.02	49	220
20 MAY 1998	5.84	7.96	0.74	51	198
09 JUN 1998	6.10	10.85	3.70	60	59
16 JUN 1998	6.63	11.40	5.28	52	159
30 JUN 1998	6.95	13.96	5.85	52	121
MW-61R					
06 JAN 1998	6.01	5.25	4.74	79	134
22 JAN 1998	5.65	4.75	4.11	101	147
05 FEB 1998	5.67	4.41	4.71	88	130
15 FEB 1998	5.69	2.27	6.45	80	146
02 MAR 1998	8.56	1.60	10.76	78	121
18 MAR 1998	6.53	1.16	11.74	71	148
14 APR 1998	5.75	6.99	2.14	85	155
25 APR 1998	6.17	8.60	8.16	85	198
07 MAY 1998	5.17	11.86	10.59	93	242
20 MAY 1998	7.11	15.17	8.91	103	169
09 JUN 1998	5.83	14.34	2.53	117	157
16 JUN 1998	7.10	16.06	6.74	109	252
30 JUN 1998	6.38	17.71	4.59	117	145
MW-62					
06 JAN 1998	5.95	8.01	6.28	47	179
22 JAN 1998	5.93	7.15	7.26	56	200
05 FEB 1998	6.56	6.48	8.84	50	120
15 FEB 1998	5.82	6.24	5.91	57	149
02 MAR 1998	7.51	6.50	10.71	64	96
18 MAR 1998	6.36	6.52	6.35	62	152
14 APR 1998	5.90	6.57	6.40	61	154
25 APR 1998	6.31	8.75	5.98	49	175
07 MAY 1998	6.19	7.24	9.92	60	235
20 MAY 1998	7.58	8.76	1.80	80	164
09 JUN 1998	8.40	8.91	9.89	43	65
16 JUN 1998	7.06	8.57	3.20	65	189
30 JUN 1998	6.37	8.81	4.07	72	142

Date	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)
MW-211					
06 JAN 1998	5.94	6.56	9.74	101	210
22 JAN 1998	5.83	3.46	5.80	158	174
05 FEB 1998	5.84	5.09	9.46	207	163
15 FEB 1998	5.91	3.57	4.81	209	152
02 MAR 1998	5.73	4.35	5.45	204	172
18 MAR 1998	6.11	4.37	6.85	238	201
14 APR 1998	6.84	6.30	1.38	170	144
25 APR 1998	6.91	7.57	2.19	140	175
07 MAY 1998	6.22	10.42	11.34	153	231
20 MAY 1998	6.32	9.77	1.24	63	187
09 JUN 1998	6.04	11.07	1.44	152	-15
16 JUN 1998	6.44	15.87	2.47	109	135
30 JUN 1998	9.40	17.26	4.14	132	66
MW-213					
06 JAN 1998	6.55	7.32	9.05	31	205
22 JAN 1998	6.56	6.35	8.47	39	146
05 FEB 1998	6.14	6.26	7.47	34	146
15 FEB 1998	6.22	5.17	7.25	38	149
02 MAR 1998	8.83	5.13	8.54	34	97
18 MAR 1998	6.82	4.70	12.38	41	239
14 APR 1998	6.34	6.85	1.14	39	141
25 APR 1998	6.57	6.98	1.37	58	143
07 MAY 1998	6.58	11.70	10.71	35	207
20 MAY 1998	6.23	11.33	7.83	33	188
09 JUN 1998	6.44	14.10	9.06	45	33
16 JUN 1998	6.87	15.34	8.10	40	119
30 JUN 1998	6.53	16.73	7.72	43	105

TABLE 3-3 SUMMARY OF FIELD MEASUREMENTS OF TOTAL VOLATILE HYDROCARBONS AT WELL POINT RISERS FROM 22 JANUARY TO 16 JUNE 1998 AT THE OLD NAVY FUEL FARM, NAVAL AIR STATION, BRUNSWICK, MAINE

Location	22 JAN 1998		15 FEB 1998		18 MAR 1998		25 APR 1998		21 May 1998		16 JUN 1998	
	FID TVH (ppm_v)	PID TVH (ppm_v)	FID TVH (ppm_v)	PID TVH (ppm_v)	FID TVH (ppm_v)	PID TVH (ppm_v)	FID TVH (ppm_v)	PID TVH (ppm_v)	FID TVH (ppm_v)	PID TVH (ppm_v)	FID TVH (ppm_v)	PID TVH (ppm_v)
WP-1	38	0.1	0	0	8.64	2.56	0	0	0.25	34	87	0
WP-2	2,360	242	650	74	576	209	222	60	347	112	5,420	270
WP-3	54	14.0	30	2	3.98	2.10	10	1	9	23	36	(a)
WP-4	426	102	31	1	140	82.87	(a)	(a)	134	32	1%	120
WP-5	2.75	0.2	0	0	9.61	4.04	30	4	17	42	226	3
WP-6	38.6	1.6	0	0	10	5.60	4	1	6	18	35	8
WP-7	22.7	5.8	102	25	55.54	14.89	2,438	38	400	26	4,230	225
WP-8	11.4	0.6	0	0	868	5.31	(a)	(a)	2.5	0.4	7,860	330
WP-9	0	1.6	0	0	0.81	0	(a)	(a)	0.5	18	2	(a)
WP-10	0	0	50	1	1.98	0.87	0	0	0.4	2.5	1	6
WP-11	13.2	2.4	600	55	1.90	0	(a)	(a)	6	1	65	4
WP-12	0	0.2	52	5	3.50	1	(a)	(a)	1	2	5	0
WP-13	0	1.1	Frozen	Frozen	1.00	0	(a)	(a)	1	0	(b)	(b)
WP-14	0	0.1	0	0	1.83	0.89	(a)	(a)	0.1	18.2	1	7
WP-15	0	0	0	0	0.83	0	(a)	(a)	1	0.5	5	3
WP-16R	0	0	0	0	0.92	0	(a)	(a)	6	0.5	(a)	(a)
WP-17R	0	0	0	0	0.95	0	(a)	(a)	1	0	(a)	(a)
WP-18R	0	0	0	0	0.71	0	(a)	(a)	0.5	3	(a)	(a)
WP-20	0	0	0	0	1.22	0	(a)	(a)	1.5	0.7	(b)	(b)
WP-21	0	0	0	0	2.07	0.61	(a)	(a)	1	0	(a)	(a)
WP-22	0	0	0	0	5.26	2.45	(a)	(a)	4	0	(a)	(a)

(a) Data not collected due to rain.
(b) Well point damaged/destroyed.

NOTE: FID = Flame ionization detector.
PID = Photoionization detector.
TVH = Total volatile hydrocarbons.
7 May 1998 data not collected due to rain.

TABLE 3-4 SUMMARY OF WELL POINT RISER HEAD SPACE METHANE, OXYGEN, AND TOTAL VOLATILE HYDROCARBON CONCENTRATIONS OBTAINED ON 16 JUNE 1998 AT THE OLD NAVY FUEL FARM, NAVAL AIR STATION, BRUNSWICK, MAINE

Location	Well Point Head Space Vapor Measurements			
	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4 (%)	O_2 (%)
WP-01	87	0.0	0	20.8
WP-02	5,420	270	2.7	19.7
WP-03	36	(a)	0.0	20.8
WP-04	1%	120	0.0	18.8
WP-05	226	3	0.1	20.5
WP-06	35	8	0.0	20.8
WP-07	4,230	225	0.3	20.8
WP-08	7,860	330	0.0	20.6
WP-09	2	(a)	0.0	20.8
WP-10	1	6	0.0	20.8
WP-11	65	4	0.0	20.8
WP-12	5	0.0	0.1	12.7
WP-13	(b)	(b)	(b)	(b)
WP-14	1	7	0.0	20.8
WP-15	5	3	0.0	20.5
WP-16R	(a)	(a)	(a)	(a)
WP-17R	(a)	(a)	(a)	(a)
WP-18R	(a)	(a)	(a)	(a)
WP-20	(b)	(b)	(b)	(b)
WP-21	(a)	(a)	(a)	(a)
WP-22	(a)	(a)	(a)	(a)

(a) Data not collected due to rain.
(b) Well point damaged/destroyed.

NOTE: FID = Flame ionization detector.
PID = Photoionization detector
TVH = Total volatile hydrocarbons.
FID response expressed as ppm_v except where noted.
Atmospheric oxygen approximately 21.8 percent.
Methane detection limit was 0.1 percent.

TABLE 3-5 SUMMARY OF ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES COLLECTED 16-18 JUNE 1998 AT THE OLD NAVY FUEL FARM, NAVAL AIR STATION, BRUNSWICK, MAINE

Compound	Sample Location										MEDEP Cleanup Goal[a]
	WP-01	WP-02	WP-03	WP-04	WP-04-DUP	WP-05	WP-06	WP-06-DUP	WP-07	WP-08	
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 602 (µg/L)											
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**52**	(<1U)	(<1U)	(<1U)	(<1U)	5
Toluene	1	(<1U)	2	3	3	710D	1	(<1U)	(<1U)	(<1U)	---
Ethylbenzene	(<1U)	2	(<1U)	(<1U)	(<1U)	890D	(<1U)	(<1U)	14	(<1U)	---
Total xylenes	5	14	3	1	3	6,700D	2	(<1U)	37	1	---
Total BTEX	6	16	5	4	6	8,352D	3	ND	51	1	---
MTBE	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	35[b]
TPH BY DHS-HETL METHOD 4.2.17 (µg/L)											
TPH-GRO	45	2,400E	40	180	32	15,000E	150	(<10U)	1,800	70	50
TPH BY DHS-HETL METHOD 4.1.25 (µg/L)											
TPH-DRO	320	4,700D	150	2,000	3,000D	1,600	360	280	660	66	50

(a) Stringent cleanup goals taken from *Procedural Guidelines for Establishing Standards for the Remediation of Oil Contaminated Soil and Ground Water in Maine*, Maine Department of Environmental Protection 1995. Dashes indicate no goal established for this compound.

(b) Maine State Legislature, Office of Policy and Legal Analysis. Memo dated 3 June 1998 addressed to members of the Natural Resources Committee and Health and Human Services Committee.

NOTE: Well points WP-13, WP-19, and WP-20 were destroyed; thus, no samples were collected.

BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
DHS-HETL = State of Maine Department of Human Services–Health and Environmental Testing Laboratory.
MTBE = Methyl tertiary-butyl ether.
TPH-GRO = Total petroleum hydrocarbons-gasoline range organics.
TPH-DRO = Total petroleum hydrocarbons-diesel range organics.
ND = No detected BTEX compounds.
D = Indicates compound identified at secondary dilution factor.
U = Not detected. Sample quantitation limits are shown as (<___U).
No volatile organic compounds were reported in the trip blanks.

Compound	Sample Location												MEDEP Cleanup Goal[a]
	WP-09	WP-10	WP-11	WP-12	WP-14	WP-15	WP-16R	WP-17R	WP-18R	WP-21	WP-22	Rinsate Blank	
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 602 (µg/L)													
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	**42**	(<1U)	**41**	**150**	(<1U)	5
Toluene	1	(<1U)	(<1U)	2	(<1U)	2	2	100	2	30	570D	(<1U)	---
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	7	(<1U)	96	110	(<1U)	---
Total xylenes	1	(<1U)	1	2	(<1U)	3	2	40	1	380	450	(<1U)	---
Total BTEX	2	ND	1	4	ND	5	4	189	3	547	1,280D	ND	---
MTBE	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	35
TPH BY DHS-HETL METHOD 4.2.17 (µg/L)													
TPH-GRO	49	**78**	**180**	(<10U)	(<10U)	43	**85**	**1,900E**	24	**3,800E**	**3,900E**	(<10U)	50
TPH BY DHS-HETL METHOD 4.1.25 (µg/L)													
TPH-DRO	**150**	**310**	**420**	**550**	**280**	**340**	**630**	**2,500D**	**100**	**1,200**	**10,000D**	**290**	50

Compound	Sample Location											MEDEP Cleanup Goal[a]
	MW-44	MW-44 DUP	MW-49	MW-51	MW-54	MW-58	MW-61R	MW-62	MW-211	MW-213	Rinsate Blank	
VOLATILE ORGANIC COMPOUNDS BY EPA METHOD 602 (µg/L)												
Benzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	5
Toluene	(<1U)	(<1U)	(<1U)	1	(<1U)	(<1U)	(<1U)	(<1U)	2,500D	(<1U)	(<1U)	---
Ethylbenzene	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	1	(<1U)	(<1U)	58	(<1U)	(<1U)	---
Total xylenes	(<1U)	(<1U)	(<1U)	1	2	1	(<1U)	(<1U)	190	(<1U)	(<1U)	---
Total BTEX	ND	ND	ND	2	2	2	ND	ND	2,748	ND	ND	---
MTBE	(<1U)	(<1U)	(<1U)	(<1U)	(<1U)	4	5	(<1U)	(<1U)	(<1U)	(<1U)	35
TPH BY DHS-HETL METHOD 4.2.17 (µg/L)												
TPH-GRO	38	28	(<10U)	21	32	(<10U)	(<10U)	(<10U)	**4,400**	(<10U)	22	50
TPH BY DHS-HETL METHOD 4.1.25 (µg/L)												
TPH-DRO	**110**	**130**	**130**	**64**	**160**	(<50U)	**86**	**76**	**900**	**61**	(<50U)	50

NOTE: Laboratory reports that samples WP-02 (WP001), WP-22 (WP003), WP-05 (WP006), WP-17R (WP015), and WP-21 (WP019) had TPH-GRO results above the upper calibration limit of 1,000 µg/L; are shown as "E."
The original calibration width affected the low concentration results. The curve was reproduced with the highest standard eliminated. High standard values are those estimated as "E."

TABLE 3-6 SUMMARY OF ANALYTICAL RESULTS FOR FERROUS IRON AND MANGANESE CONCENTRATIONS IN GROUND-WATER SAMPLES COLLECTED 16-18 JUNE 1998 AT THE OLD NAVY FUEL FARM, NAVAL AIR STATION, BRUNSWICK, MAINE

Location	Ferrous Iron (mg/L)	Manganese (mg/L)
WP-1	1.07	0.3
WP-2	1.37	0.1
WP-3	2.83	0.1
WP-4	0.76	0.1
WP-4 DUP	1.16	0.1
WP-5	0.76	0.1
WP-6	0.63	0.2
WP-7	2.33	0.2
WP-8	1.60	0.2
WP-9	0.09	0.0
WP-10	1.07	0.3
WP-11	0.71	0.1
WP-12	0.50	0.0
WP-14	0.57	0.1
WP-15	0.39	0.1
WP-16R	0.07	0.1
WP-17R	2.91	0.2
WP-18R	0.09	0.1
WP-21	3.24	0.2
WP-22	0.09	0.2

TABLE 3-7 SUMMARY OF ANALYTICAL RESULTS FOR GROUND-WATER SAMPLES COLLECTED FROM 7-8 AUGUST 1996 TO 18 JUNE 1998 AT THE OLD NAVY FUEL FARM, NAVAL AIR STATION, BRUNSWICK, MAINE

Date	Parameters							
	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE	TPH–GRO	TPH–DRO
WP-01								
7-8 AUG 1996	(<1U)	2.1	(<1U)	12.0	14.1	16	77	1,000
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	2.2	2.2	(<1U)	3,300	750
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	260	1,800
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	1	1	(<1U)	140	640
16-18 JUN 1998	(<1U)	1	(<1U)	5	6	(<1U)	45	320
WP-02								
7-8 AUG 1996	5.6	34	94	940	623.6	34	4,200	16,000
24-25 JUN 1997	3	13	81	450	547	(<1U)	4,200	23,000D[a]
10-11 DEC 1997	(<1U)	(<1U)	2	12	14	(<1U)	18,000D	5,900D
16-18 JUN 1998	(<1U)	(<1U)	2	14	16	(<1U)	2,400E[b]	4,700D
WP-03								
7-8 AUG 1996	17	72	1.3	3.1	93.4	1.3	140	410
4-5 DEC 1996	(<1U)	2.6	(<1U)	5.1	7.7	(<1U)	4,100	670
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	1	130	440
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	200	170
16-18 JUN 1998	(<1U)	2	(<1U)	3	5	(<1U)	40	150
WP-04								
7-8 AUG 1996	1.6	3.8	7.5	15.5	28.4	31	890	1,300
24-25 JUN 1997	3	10	94	530	637	1	16,000	12,000,000
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	6,800D	49,000D
16-18 JUN 1998	(<1U)	3	(<1U)	1	4	(<1U)	180	2,000
WP-05								
7-8 AUG 1996	12	740[c]	700[c]	4,300[c]	5,752	14	9,000	1,000
4-5 DEC 1996	17	240	350	2,420	3,027	8.7	4,800	(<50U)
24-25 JUN 1997	55	1,700D	1,100D	8,500D	11,355	(<1U)	15,000	2,700D
10-11 DEC 1997	1	10	6	178	195	4	890D	760
16-18 JUN 1998	52	710D	890D	6,700D	8,352D	(<1U)	15,000E[b]	1,600

(a) Chromatographic patterns indicated the presence of a heavy petroleum product, much of which eluted beyond the DRO retention time range.
(b) Results of TPH-GRO analysis above upper instrument calibration limit. Laboratory flagged as "E." The original calibration curve width affected low concentration results. Upon reanalysis, the high standard results were estimated.
(c) Reanalysis due to low surrogate recovery.

NOTE: BTEX = Benzene, toluene, ethylbenzene, and total xylenes.
MTBE = Methyl tertiary-butyl ether.
ND = Not detected.
D = Indicates compound identified at secondary dilution factor.
TPH = Total petroleum hydrocarbons; GRO = Gasoline range organics; DRO = Diesel range organics.
(<__U) = Compound not detected above method detection limit shown.
Results reported in $\mu g/L$.

Date	Parameters							
	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE	TPH–GRO	TPH–DRO
WP-06								
7-8 AUG 1996	(<1U)	3.8	(<1U)	3.7	7.5	32	31	150
4-5 DEC 1996	(<1U)	2.9	(<1U)	1.4	4.3	(<1U)	20	(<50U)
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	210	450
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	1	1	(<1U)	200	220
16-18 JUN 1998	(<1U)	1	(<1U)	2	3	(<1U)	150	360
WP-07								
7-8 AUG 1996	(<1U)	12.0	6.0	49.2	67.2	9.9	2,500	680
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	4,000	1,200
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	11,000D	1,300
16-18 JUN 1998	(<1U)	(<1U)	14	37	51	(<1U)	1,800	660
WP-08								
7-8 AUG 1996	15	6.4	1.5	6.1	29.0	29	220	480
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	1.3	1.3	(<1U)	270	150
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	1,600	2,400D
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	560	730
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	1	1	(<1U)	70	66
WP-09								
7-8 AUG 1996	1.0	5.4	1.3	8.7	16.4	130	93	89
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	1.0	1.0	(<1U)	730	(<50U)
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	110	NA
16-18 JUN 1998	(<1U)	1	(<1U)	1	2	(<1U)	49	150
WP-10								
7-8 AUG 1996	31	46	17	72	166	49	550	420
4-5 DEC 1996	(<1U)	4.0	2.0	13.6	19.6	(<1U)	130	(<50U)
24-25 JUN 1997	34	26	9	41	110	(<1U)	310	470
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	25	240
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	78	310
WP-11								
7-8 AUG 1996	78	3,000[b]	170	750	3,998	51	5,500	3,600
4-5 DEC 1996	9.9	220	1.7	38	269.6	(<1U)	3,400	220
24-25 JUN 1997	320	6,700D	72	335	7,427	2	9,100	12,000D
10-11 DEC 1997	(<1U)	5	(<1U)	2	7	(<1U)	490	1,200
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	1	1	(<1U)	180	420
WP-12								
4-5 DEC 1996	(<1U)	190	9.1	392	591.1	(<1U)	870	390
16-18 JUN 1998	(<1U)	2	(<1U)	2	4	(<1U)	(<10U)	550

NOTE: NA = Not analyzed; insufficient water.

Date	Parameters							
	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE	TPH–GRO	TPH–DRO
WP-13								
7-8 AUG 1996	15	380	56	315	766	89	2,200	580
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	57	57	(<1U)	950	3,100
24-25 JUN 1997	12	270	3	15	300	(<1U)	430	290
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	470	NA
16-18 JUN 1998	Data not available (well blocked)							
WP-14								
7-8 AUG 1996	(<1U)	10	(<1U)	4.5	14.5	1.6	34	140
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	15	62
24-25 JUN 1997	(<1U)	1	(<1U)	(<1U)	1	(<1U)	(<25U)	280
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	38	280
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	280
WP-15								
7-8 AUG 1996	5.5	19	1.7	7.6	33.8	2.0	47	500
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	66
24-25 JUN 1997	(<1U)	1	(<1U)	(<1U)	1	(<1U)	160	570
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	160	570
16-18 JUN 1998	(<1U)	2	(<1U)	3	5	(<1U)	43	340
WP-16								
4-5 DEC 1996	(<1U)	1.2	(<1U)	1.3	2.5	(<1U)	11	(<50U)
WP-16R								
16-18 JUN 1998	(<1U)	2	(<1U)	2	4	(<1U)	85	630
WP-17R								
16-18 JUN 1998	42	100	7	40	189	(<1U)	1,900E[(b)]	2,500D
WP-18								
7-8 AUG 1996	(<1U)	7.8	(<1U)	3.8	11.6	(<1U)	22	75
4-5 DEC 1996	(<1U)	1.6	(<1U)	1.5	3.1	(<1U)	35	(<50U)
WP-18R								
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	330
16-18 JUN 1998	(<1U)	2	(<1U)	1	3	(<1U)	24	100
WP-19								
7-8 AUG 1996	(<1U)	3.4	(<1U)	1.2	4.6	3.9	260	100
4-5 DEC 1996	(<1U)	1.2	(<1U)	2.6	3.8	(<1U)	1,100	210
24-25 JUN 1997	(<1U)	4	(<1U)	(<1U)	4	(<1U)	1,000	400
16-18 JUN 1998	Well point destroyed							
WP-20								
7-8 AUG 1996	1.0	7.2	1.0	6.3	15.5	3.6	310	73
4-5 DEC 1996	(<1U)	1.2	(<1U)	3.6	4.8	(<1U)	14	(<50U)
24-25 JUN 1997	(<1U)	2	(<1U)	(<1U)	2	(<1U)	(<25U)	370
10-11 DEC 1997	(<1U)	2	(<1U)	(<1U)	2	(<1U)	(<10U)	200
16-18 JUN 1998	Data not available (well blocked)							

Date	Parameters							
	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE	TPH–GRO	TPH–DRO
WP-21								
10-11 DEC 1997	68	90	120	540	818	16	8,500D	3,700D
16-18 JUN 1998	41	30	96	380	547	(<1U)	3,800E[b]	1,200
WP-22								
10-11 DEC 1997	52	180	12	138	382	(<1U)	3,400D	5,200D
16-18 JUN 1998	150	570D	110	450	1,280D	(<1U)	3,900E[b]	10,000D
MW-44								
10 JUN 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<50U)	(<100U)
7-8 AUG 1996	(<1U)	2.5	(<1U)	1.1	3.6	(<1U)	16	(<50U)
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	110	290
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<25U)	56
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	84
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	38	110
MW-49								
10 JUN 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<50U)	(<50U)
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	110[d]
24-25 JUN 1997	(<1U)	2	(<1U)	(<1U)	2	(<1U)	(<25U)	140
10-11 DEC 1997	(<1U)	2	(<1U)	(<1U)	2	(<1U)	(<10U)	190
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	130
MW-51								
10 JUN 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	2.1	(<50U)	(<100U)
7-8 AUG 1996	(<1U)	1.2	(<1U)	(<1U)	1.2	4.8	14	(<50U)
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	(<50U)[d]
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<25U)	52
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	93
16-18 JUN 1998	(<1U)	1	(<1U)	1	2	(<1U)	21	64
MW-54								
10 JUN 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<50U)	(<100U)
4-5 DEC 1996	(<1U)	(<1U)	1.2	(<1U)	1.2	(<1U)	15	260[d]
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<25U)	230
10-11 DEC 1997	1	(<1U)	(<1U)	(<1U)	1	(<1U)	150	310
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	2	2	(<1U)	32	160
MW-56								
10 JUN 1996	(<1U)	1.8	(<1U)	1.0	2.8	(<1U)	44	56
16-18 JUN 1998	Well not sampled							

(d) Chromatographic pattern indicated the presence of more than one petroleum product. This sample had responses which eluted before and after the DRO retention time range.

Date	Parameters							
	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	MTBE	TPH–GRO	TPH–DRO
MW-58								
10 JUN 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<50U)	(<100U)
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	230[d]
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<25U)	100
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	98
16-18 JUN 1998	(<1U)	(<1U)	1	1	2	4	(<10U)	(<50U)
MW-61R								
24-25 JUN 1997	(<1U)	1	(<1U)	(<1U)	1	(<1U)	32	320[a]
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	75	210
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	(<1U)	ND	5	(<10U)	86
MW-62								
10 JUN 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<50U)	(<100U)
4-5 DEC 1996	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	11	52
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<25U)	58
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<10U)	64
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<1U)	76
MW-211								
4-5 DEC 1996	1,300[b]	12,000[b]	250	2,770	16,320	120	30,000	6,700[d]
24-25 JUN 1997	510D	20,000D	200	950	21,660	(<1U)	24,000	3,000D
10-11 DEC 1997	110	5,800D	56	335	6,301	(<1U)	19,000D	1,700
16-18 JUN 1998	(<1U)	2,500D	58	190	2,748	(<1U)	4,400	900
MW-213								
4-5 DEC 1996	(<1U)	(<1U)	2.0	(<1U)	2.0	(<1U)	100	66D
24-25 JUN 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	(<25U)	180
10-11 DEC 1997	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	52	79
16-18 JUN 1998	(<1U)	(<1U)	(<1U)	(<1U)	ND	(<1U)	22	(<50U)

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Appendix A

Field Record of Water Quality Analysis Forms

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: SC, BA	Date: 1/6/98	Time:
Weather: rainy, 40°	Equipment: YSI 600 - Solinst interface mete

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
WP-1	4.96	—	5.49	4.85	5.56	187	204		
WP-2	5.87	—	5.83	3.15	5.28	96	194		
WP-3	4.91	—	5.69	5.37	5.81	39	162		
WP-4	6.85	—	6.13	5.39	6.92	120	173		
WP-5	5.67	—	5.18	5.74	6.28	29	201		
WP-6	4.91	—	5.87	5.46	6.98	32	191		
WP-7	5.46	—	5.69	3.60	6.12	93	78		
WP-8	5.22	—	6.61	4.74	5.28	167	172		
WP-9	Dry								
WP-10	5.86	—	5.05	7.98	6.58	58	204		
WP-11	5.72	—	5.58	4.36	6.91	53	208		
WP-12	Dry								
WP-13	4.61	—	6.27	1.24	9.89	41	174		
WP-14	6.52	—	7.03	6.27	9.12	19	153		
WP-15	6.32	—	5.89	5.09	6.96	26	193		
WP-16R									
WP-17R									
WP-18R									
WP-20	6.02	—	6.36	1.37	10.12	32	174		
WP-21									
WP-22									

EA 5120 0794-7

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: SC, BA	Date: 1/6/98	Time:
Weather: 40° rainy	Equipment: YSI-600, Solinst interface meter	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
MW-NASB 211	7.93	—	5.94	6.56	9.74	101	210		
MW-NASB 213	7.55	—	6.55	7.32	9.05	31	209		
51	5.62	—	7.24	7.06	6.88	59	199		
49	5.81	—	6.39	7.09	7.21	63	230		
58	6.22	—	6.37	7.69	5.84	38	216		
43	dry	—							
61R	5.09	—	6.01	5.29	4.74	79	134		
44	3.59	—	5.80	4.91	5.68	51	188		
62R	9.35	—	5.93	8.01	6.28	47	179		
56R	blocked	—							
54	6.74	—	4.95	6.62	6.51	83	209		

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: BDA	Date: 11/22/98	Time: 1030
Weather: Cold Clear	Equipment: YSI 610D/ Interface probe Slope indicator	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
WP-1	4.97	–	5.74	3.13	5.09	218	140	
WP-2	5.92	–	5.93	3.28	5.49	117	176	
WP-3	4.82	–	5.47	4.88	2.86	49	181	
WP-4	6.71	–	6.19	4.53	2.81	178	141	
WP-5	5.82	–	5.38	5.57	3.69	63	217	
WP-6	4.99	–	5.55	4.74	3.31	77	149	
WP-7	5.65	–	5.83	3.61	2.90	193	59	
WP-8	6.42	–	6.04	3.78	6.69	224	187	
WP-9	Dry							
WP-10	6.06	–	5.04	6.56	3.86	70	253	
WP-11	6.06	–	5.92	4.20	4.34	54	127	
WP-12	Dry							
WP-13	7.70	Bottom Out						
WP-14	6.63	–	5.53	4.66	3.17	67	207	
WP-15	6.58	–	5.65	4.66	5.82	78	166	
WP-16R	Frozen at 6in level							
WP-17R	8.70	–						
WP-18R	Frozen at 6in level							
WP-20	6.44	–	6.12	2.48	10.58	249	181	
WP-21	6.95	Icy						
WP-22	7.78	=						

EA 5120 0794-7

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: B. Andersen	Date: 11/22/98	Time: 1030
Weather: Clear, Cold (16°F)	Equipment: YST (6101) / Interface probe	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
43	Dry							
211	8.73	—	5.83	3.46	5.80	158	174	
213	6.89	—	6.56	6.35	8.47	39	146	
54	6.75	—	5.83	7.55	2.47	100	228	
44	3.55	—	5.97	4.95	3.51	71	127	
61R	5.22	—	5.65	4.75	4.11	101	147	
62	9.85	—	5.93	7.15	7.26	56	200	
51	5.07	—	6.38	5.30	5.70	68	176	
56	Blocked							
58	6.15	—	6.14	6.87	5.26	49	181	
49	5.83	—	6.07	6.79	6.41	72	187	

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: MDC	Date: 2/5/98	Time:
Weather:	Equipment: interface meter YSI 600XL	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
WP-1	4.80	–	5.59	4.20	7.43	338	146	
WP-2	7.72	–	5.89	3.33	5.38	103	144	
WP-3	4.45	–	5.45	4.63	5.22	43	167	
WP-4	6.46	–	5.82	3.90	7.05	158	114	
WP-5	5.58	–	5.42	4.70	6.06	77	144	
WP-6	4.65	–	5.72	4.55	4.47	70	147	
WP-7	5.47	–	Blocked					
WP-8	6.05	–	6.66	3.19	12.79	189	100	
WP-9	Dry							
WP-10	5.65	–	5.86	6.24	6.26	64	156	
WP-11	Frozen							
WP-12	Dry							
WP-13	Frozen							
WP-14	Frozen							
WP-15	8.00		5.98	4.11	9.33	69	187	
WP-16R	Frozen							
WP-17R	Frozen							
WP-18R	Frozen							
WP-20	6.45	~~6.00~~	6.00 ~~2.10~~	2.10 ~~10.60~~	10.60	214	175	
WP-21	Frozen							
WP-22	Frozen							

EA 5120 0794-7

* WP8 Sparging

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: MDC	Date: 2/5/98	Time
Weather:	Equipment: interface meter, YSI-600XL	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
x 43	DRY								
x 211	7.25		5.84	5.09	9.46	207	163		
x 213	6.70		6.14	6.26	7.47	34	146		
x A 54	6.52		7.20	7.69	3.05	163	182		
x 44	3.35		5.75	4.75	5.35	62	131		
x D 61R	4.97		5.67	4.41	4.71	88	130		
x F 62	8.82		6.56	6.48	3.84	50	120		
x 51	5.10		6.12	4.93	3.76	57	174		
x 56R									
x 58	6.20		6.11	6.78	5.44	41	184		
x 49									

Comments:

6.70

EA 5120 0794-7

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: MOC	Date: 2115	Time:
Weather: Sunny, 70	Equipment: YSI-600XL, interface meter	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (µhmos)	Redox (mV)	Riser	Bottom
WP-1	4.90		5.56	3.39	2.21	291	180		
WP-2	5.85		6.32	2.79	3.89	22	141		
WP-3	4.82		5.60	4.22	3.13	43	176		
WP-4	6.65		5.89	3.02	2.87	145	70		
WP-5	5.72		5.42	4.37	4.94	75	144		
WP-6	5.00		5.68	4.36	3.56	76	140		
WP-7	Blocked								
WP-8	6.40		5.61	2.85	8.48	105	191		
WP-9	DRY								
WP-10	7.56		5.37	5.22	6.79	66	253		
WP-11	Frozen								
WP-12	DRY								
WP-13	can not open								
WP-14	Frozen								
WP-15	6.35		5.8	3.36	A	68	222		
WP-16R	Frozen								
WP-17R	Frozen								
WP-18R	Frozen								
WP-20	6.00		6.03	1.62	10.5?	61	178		
WP-21	Frozen								
WP-22	Frozen								

EA 5120 0794-7

A - DO probe frozen stopped Taking readings

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: MDC	Date: 2115	Time:
Weather: Sunny, 70	Equipment: YSI-600XL, interface meter	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (µhmos)	Redox (mV)	Riser	Bottom
x 43	DRY								
x * 211	8.40		5.91	3.57	4.81	209	152		
x 213	6.45		6.22	5.17	7.25	38	149		
x 54	6.30		5.79	4.33	10.3	39	377		
x 44	3.47		5.92	4.68	3.28	61.~~00~~	159		
x 61R	5.05		5.69	2.27	6.45	80	146		
x 62	8.40		5.82	6.24	5.91	57	149		
x 51	FROZEN.								
x 56R	Blocked								
x 58	6.05		6.24	6.25	17	42	189		
46 ~~49~~	5.32		6.00	3.72	~~A~~	181	193		
x 49	5.58		6.44	5.39	A	51	181		

Comments: * 211 Had to break layer of ice on top of water
A-DO Probe Frozen stop Taking readings

4.50

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: SAP KC	Date: 3/2/98	Time: 1440
Weather: Sunny 50°	Equipment:	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
WP-1	3.44	—	5.68	1.27	9.27	239	189.1		
WP-2	4.74	—	5.62	2.65	5.86	94	214.8		
WP-3	3.39	—	6.46	1.63	10.97	31	182.7		
WP-4	4.67	—	5.67	1.75	9.84	105	191.2		
WP-5	5.02	—	5.65	4.58	5.05	86	194.4		
WP-6	3.93	—	5.30	3.16	6.10	72	228.9		
WP-7	4.11	—	6.11	0.99	6.04	89	198.6		
WP-8	4.82	—	6.28	3.25	9.73	91	185.6		
WP-9	Dry								
WP-10	4.64	—	5.53	5.46	6.81	41	196.5		
WP-11	Dry								
WP-12	7.49	—	5.77	4.04	7.09	39	175.3		
WP-13	4.19	—	5.99	1.77	7.19	47	185.9		
WP-14	4.25	—	5.40	3.96	3.01	168	185.7		
WP-15	5.05	—	5.89	3.35	5.04	73	211.9		
WP-16R	8.49	—	~~11.94~~ ~~11.84~~	~~7.77~~ ~~8.42~~	~~11.76~~ ~~11.45~~	~~4.13~~ ~~8.45~~	~~2.5~~ ~~7.5~~		
WP-17R	~~Dry~~ 2.61	—							
WP-18R									
WP-20	4.57	—	6.00	2.02	8.46	71	193.7		
WP-21R	Blocked								
WP-22									

Coulden't get tubing down

EA 5120 0194-7

Could'nt get probe down

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: SAP KC	Date: 3/2/98	Time: 1440
Weather: Sunny 50°	Equipment:	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
x 43	6.74	—	9.17	2.37	11.67	28	49.2		
x 211	7.00	—	5.73	4.35	5.45	204	172.1		
x 213	5.99	—	8.83	5.13	8.54	34	96.9		
x 54	5.32	—	6.47	5.48	7.31	57	144.4		
x 44	8.88	—	8.67	7.63	5.23	259	120.4		
x 61R	3.70	—	8.56	1.60	10.76	78	120.8		
x 62	7.75	—	7.51	6.50	10.71	64	96.3		
x 51	3.86	—	7.61	2.38	8.73	52	135.9		
x 56R	Blocked								
x 58	8.78	—	7.90	5.80	7.23	43	120.3		
x 49	5.56	—	8.01	6.24	4.79	53	125.9		

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: KR/SP	Date: 03/18/98	Time: 1030
Weather: Sunny, Mild, 40°F	Equipment: Slope Indicator #46; Interface probes; YSI	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
WP-1	3.51	—	6.08	0.60	9.75	160	168	
WP-2	4.86	—	6.08	2.12	9.55	85	199	
WP-3	3.46	—	6.15	2.95	6.45	46	185	
WP-4	4.45	—	6.49	3.19	10.39	94	250	
WP-5	4.99	—	5.99	4.37	7.83	88	167	
WP-6	3.89	—	6.38	2.54	8.78	45	175	
WP-7	4.09	—	6.40	1.53	9.67	104	174	
WP-8	4.50	—	6.21	3.24	10.95	162	175	
WP-9	6.39	—	6.44	4.37	9.66	126	252	
WP-10	4.48	—	7.02	2.15	11.50	28	249	
WP-11	4.68	—	6.66	2.38	11.05	60	248	
WP-12	6.48	—	6.50	3.18	11.10	85	252	
WP-13	4.57	—	6.66	2.61	5.02	36	247	
WP-14	5.12	—	6.88	2.53	11.79	40	246	
WP-15	4.92	—	6.75	2.92	11.86	63	249	
WP-16R	6.55	—	7.99	5.36	9.60	157	116	
WP-17R	6.80	—	8.80	4.92	9.61	94	114	
WP-18R	5.46	—	8.98	5.15	12.56	79	113	
WP-20	4.98	—	6.77	2.27	11.22	40	234	
WP-21	6.05	—	6.90	5.78	9.93	41	145	
WP-22	5.74	—	9.02	4.40	8.83	110	101	

EA 5120 0794-7

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: KR/SP	Date: 03/18/98	Time: 1030
Weather: Sunny, mild, 40°F	Equipment: Slope indicator #46, interface probe, YSI	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
43	6.17	—	6.68	2.50	13.42	0	237		
61R	3.46	—	6.53	1.16	11.74	71	148		
213	4.44	—	6.82	4.70	12.38	~~238~~ 41	~~239~~ 239		
54	5.41	—	7.87	3.87	10.04	45	232		
~~KK~~	~~4.11~~	~~—~~	~~6.89~~	~~4.90~~	~~13.38~~	~~41~~	~~239~~		
21M	6.22	—	6.11	4.37	6.85	238	201		
62	8.02	—	6.36	6.52	6.35	62	152		
51	3.94	—	6.73	2.36	12.82	32	245		
56R	Blocked								
58	5.73	—	6.70	5.54	8.90	44	239		
49	8.57	—	6.64	4.46	6.98	39	244		
44	9.56	—	6.21	1.86	5.46	38	196		

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: M. Chase, J. Hutchins	Date: 4/14/98	Time: 13:00
Weather: Sunny, 55°	Equipment:	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
WP-1	4.38		5.65	5.57	5.79	2.65	158		
WP-2	5.33		5.95	6.17	6.02	140	143		
WP-3	3.83		5.72	5.67	6.26	47	171		
WP-4	4.96		5.76	6.54	7.00	115	152		
WP-5	5.31		5.50	6.13	2.92	83	171		
WP-6	4.20		5.85	4.94	5.05	50	164		
WP-7	4.63		5.74	6.15	7.00	240	107		
WP-8	4.94		5.69	5.97	11.68	188	169	"AIR SPARGING IN WP-8"	
WP-9	6.02		6.00	6.59	9.17	157	169		
WP-10	4.70		5.60	5.71	2.36	58	173		
WP-11	5.06		6.02	5.82	7.73	90	165		
WP-12	6.53		6.34	5.77	1.71	82	143		
WP-13	4.98		6.16	6.21	1.54	45	152		
WP-14	5.41		5.88	6.21	2.39	117	183		
WP-15	5.32		5.81	6.67	6.29	61	151		
WP-16R									
WP-17R									
WP-18R									
WP-20	5.43		5.81	6.10	4.77	477	196		
WP-21									
WP-22									

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: M. Chase, J. Hutchins	Date: 4/14/98	Time: 13:00
Weather: Clear, 55°,	Equipment:	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (µhmos)	Redox (mV)	Riser	Bottom
MW-211	6.32		6.84	6.30	1.38	170	144		
213	4.99		6.34	6.85	1.14	39	141		
51	4.21		6.53	5.05	3.13	38	151		
49	5.71		6.12	5.90	2.99	76	158		
58	5.94		6.18	6.42	5.29	45	146		
~~43~~									
61R	4.41		5.75	6.99	2.14	85	155		
44	2.81		6.08	5.94	5.49	43	140		
62	8.35		5.90	6.57	6.40	61	154		
54	5.65		6.87	6.29	2.88	75	226		
x 43	4.54		6.11	4.84	3.26	191	172		

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: M. Chase	Date: 4/25/98	Time:
Weather:	Equipment:	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
WP-1	3.33	~~5~~ —	5.94	8.75	3.11	88	185	
WP-2	4.00	—	5.95	8.81	3.39	176	154	
WP-3	3.10	—	6.01	8.32	4.98	45	180	
WP-4	4.03	—	5.86	7.53	5.97	91	150	
WP-5	4.57	—	5.90	7.03	6.87	79	233	
WP-6	3.25	—	5.74	6.88	5.00	53	184	
WP-7	3.35	—	5.79	8.29	2.05	165	177	
WP-8	3.36	—	5.66	8.00	9.67	179	160	
WP-9	5.38	—	6.09	8.31	7.35	108	153	
WP-10	3.35	—	6.18	7.41	6.67	60	314	
WP-11	4.73	—	6.37	7.53	6.39	105	173	
WP-12	5.48	—	5.98	6.97	2.76	78	120	
WP-13	3.76	—	6.38	8.31	1.79	50	180	
WP-14	4.59	—	5.97	7.78	3.01	137	120	
WP-15	5.00	—	5.43	6.98	4.38	50	157	
WP-16R		—						
WP-17R		—						
WP-18R		—						
WP-20	3.98	—	6.71	8.31	3.99	397	180	
WP-21		—						
WP-22		—						

EA 5120 0794-7

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel:	Date: 4/25/98	Time:
Weather:	Equipment:	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
MW-211	5.72		6.91	7.57	2.19	140	175		
213	4.35		6.57	6.98	1.37	58	143		
51	4.03		5.48	7.35	4.72	34	187		
49	5.61		6.38	5.74	3.61	72	198		
58	4.32		5.98	6.97	4.78	87	123		
43	3.79		6.20	7.79	3.78	142	180		
61R	3.55		6.17	8.60	8.16	85	198		
44	2.05		6.26	7.76	4.96	42	150		
62	6.97		6.31	8.75	5.98	49	175		
54	4.40		6.85	8.12	7.78	71	291		

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: RH. / BA	Date: 7 MAY 98	Time: 0700 - 1300
Weather: RAIN HEAVY AT TIMES	Equipment: YSI 610D / SOLINST 121	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (µhmos)	Redox (mV)	Riser	Bottom
WP-1	3.29	—	5.96	11.63	8.12	202	223		
WP-2	4.05	—	~~6.04~~ 6.27	~~11.95~~ 11.66	~~8.34~~ 10.14	~~38~~ 97	~~199~~ 194		
WP-3	2.67	—	5.98	11.32	8.85	58	206		
WP-4	2.35	—	6.45	11.92	8.35	48	212		
WP-5	3.30	—	6.27	11.66	10.14	38	194		
WP-6	2.32	—	6.12	11.70	9.52	28	191		
WP-7	2.80	—	6.05	12.02	9.15	116	227		
WP-8	2.98	—	6.09	11.40	11.19	235	229		
WP-9	3.51	—	6.24	10.13	11.16	120	223		
WP-10	1.6	—	6.52	11.86	9.00	29.0	227		
WP-11	3.00	—	6.09	11.95	9.58	62	224		
WP-12	4.06	—	6.35	11.74	10.44	39	221		
WP-13	2.36	—	6.74	11.78	7.93	49	221		
WP-14	2.69	—	8.66	11.33	7.01	51	167		
WP-15	3.15	—	6.22	11.29	10.72	42	219		
WP-16R	4.13	—	10.03	11.24	10.39	269	123		
WP-17R	4.11	—	5.78	10.05	8.16	105	~~5.78~~ 233		
WP-18R	2.41	—	9.21	11.29	11.63	134	136		
WP-20	3.20	—	6.17	11.30	9.97	68	233		
WP-21	6.31	—	9.70	10.60	9.10	34	121		
WP-22	4.18	—	10.33	10.68	7.01	485	95		

EA 5120 0794-7

SV 5/12/98

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EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: RH / BA	Date: 7 May 98	Time: 0700-1300
Weather: Rain Heavy at times	Equipment: YSI 610D / Solinist 121	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
MW 54	2.90	—	7.08	10.91	10.28	68	216	
MW 61R	3.35	—	5.17	11.86	10.59	93	242	
MW 44	1.66	—	6.28	7.45	7.27	47	183	
MW 211	4.26	—	6.22	10.42	11.34	153	231	
MW 213	3.30	—	6.58	11.70	10.71	35	207	
MW 51	2.95	—	6.56	9.56	11.10	27	200	
MW 49	4.07	—	5.79	7.27	1.63	54	222	
MW 58	5.50	—	5.98	8.12	1.02	49	220	
MW 62	7.59	—	6.19	7.24	9.92	60	235	

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: KI	Date: 5/21/98	Time: 0730
Weather: CLEAR, 70°F	Equipment: YSI - 610 DM INTERFACE PROBE - SOUNST, QA-90	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (µhmos)	Redox (mV)	Riser	Bottom
WP-1	4.43	—	5.76	10.60	0.41	284	160		
WP-2	5.32	—	6.09	11.13	0.79	148	161		
WP-3	3.72	—	5.51	12.16	1.13	48	195		
WP-4	4.82	—	5.88	10.29	0.62	138	191		
WP-5	5.20	—	5.50	8.98	0.77	70	178		
WP-6	4.21	—	~~5.69~~ 5.58	8.38	0.43	51	174		
WP-7	4.63	—	5.74	12.06	0.84	240	179		
WP-8	5.03	—	6.02	10.38	0.57	300	173		
WP-9	4.78	—	5.99	11.27	4.45	138	183		
WP-10	4.68	—	6.54	8.70	1.50	60	253		
WP-11	4.98	—	5.94	10.18	0.52	107	154		
WP-12	6.17	—	5.71	10.40	0.40	127	198		
WP-13	4.46	—	6.45	10.97	0.58	63	167		
WP-14	5.36	—	5.67	10.70	0.80	104	212		
WP-15	5.25	—	6.04	11.31	9.47	54	170		
WP-16R	5.54	—	9.54	12.13	1.37	344	64		
WP-17R	6.27	SHEEN	9.38	13.54	~~14~~ 2.08	143	177		
WP-18R	5.35	—	6.62	16.12	9.74	168	176		
WP-20	5.09	—	6.06	12.01	3.12	392	184		
WP-21	5.64	—	6.10	12.18	2.92	146	182		
WP-22	6.00	SHEEN	11.40	15.50	3.07	1067	-34		

EA 5120 0794-7

PUMPED W/ ISCO

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: KJ	Date: 5/20/98	Time: 1400
Weather: CLEAR, 70°F, BREEZY	Equipment: INTERFACE PROBE- SOLINST, YSI - SIDPH	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
MW-21	6.15	—	6.32	9.77	1.24	63	187		
MW-213	4.58	—	6.23	11.33	7.83	33	188		
MW-51	4.05	—	6.09	7.88	1.34	53	198		
MW-49	5.72	—	5.73	8.27	1.01	64	211		
MW-58	5.84	—	5.84	7.96	0.74	51	198		
MW-46	4.14	—	6.01	8.46	~~1.20~~	213	202		
MW-61R	4.49	—	7.11	15.17	8.91	103	169.5		
MW-44	2.81	—	6.81	11.19	1.40	47	180.1		
MW-62	8.20	—	7.58	~~10.22~~ 8.76	1.80	80	164.3		
MW-54	5.52	—	4.88	8.80	3.14	85	242		
MW-43	6.18	—	5.74	12.01	1.07	21	197		
MW-56	- OBSTRUCTION IN WELL				—	—	—	—	—

Comments: FOUND BLOWER C-2 OFF. TRIED TO TURN ON.

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: Brian Andrews	Date: 6/9/98	Time: 1000 –
Weather: partly cloudy	Equipment: YSI / Solinst	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
WP-1	4.69	—	5.69	14.18	1.81	393	-4		
WP-2	5.66	—	5.79	13.66	1.83	156	27		
WP-3	4.35	—	5.64	13.94	4.58	56	90		
WP-4	7.82	—	5.86	12.73	0.51	193	-2		
WP-5	5.52	—	5.76	11.61	2.05	91	35		
WP-6	4.65	—	5.60	11.27	1.83	82	68		
WP-7	5.07	—	5.74	12.51	1.48	250	-19		
WP-8	5.67	—	5.90	13.36	2.33	382	90		
WP-9	6.35	—	5.88	13.13	4.67	212	82		
WP-10	5.47	—	5.31	10.13	2.73	78	181		
WP-11	5.45	—	5.75	12.76	0.62	144	-13		
WP-12	7.35	—	5.73	13.35	4.01	69141	73		
WP-13	5.81	—	6.17	13.50	3.58	74	67		
WP-14	6.07	—	5.78	12.40	2.37	146	170		
WP-15	5.93	—	5.77	12.70	8.66	73	109		
WP-16R	7.28	—	6.41	14.10	3.86	465	100		
WP-17R	7.60	—	5.97	15.71	6.63	81	122		
WP-18R	6.18	—	7.13	16.28	9.90	202	1		
WP-20	Destroyed — Broken.								
WP-21	6.33		7.50	12.56	3.76	186	-82		
WP-22	6.73	—	11.24	12.95	2.77	1292	-68		

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: BA	Date: 6/9/98	Time: 1800
Weather: partly cloudy, warm	Equipment: YSI 610D	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
MW54	6.32	—	6.54	13.03	6.49	120	257		
MW61E	4.81	—	5.83	14.34	2.53	117	157		
MW-44	3.55	—	6.13	14.11	4.04	60	59		
MW-56	SPARGING								
MW-211	7.19	—	6.04	11.07	1.44	152	-15		
MW-213	5.75	—	6.44	14.10	9.06	45	33		
MW-49	5.91	—	5.68	10.65	1.81	92	120		
MW-58	6.10	—	6.10	10.85	3.76	60	59		
MW-51	4.73	—	6.36	12.61	9.63	41	97		
MW-43	DRY								
MW62	8.92	—	8.40	8.91	9.89	43	65		

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: BDA	Date: 6/16/98	Time:
Weather: Cloudy, Rain	Equipment: YSI	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
WP-1	3.28	—	6.80	15.45	2.60	137	212	
WP-2	4.02	—	6.86	16.06	3.62	65	172	
WP-3	2.96	—	6.88	15.52	4.73	50	174	
WP-4	2.49	—	6.61	16.01	3.41	62	122	
WP-5	3.71	—	6.90	16.21	6.88	36	169	
WP-6	2.35	—	6.85	15.49	4.27	25	175	
WP-7	3.00	—	6.65	14.33	3.45	123	175	
WP-8	3.03	—	6.55	13.84	1.96	221	146	
WP-9	3.05	—	6.48	15.97	8.24	113	127	
WP-10	1.68	—	6.91	16.34	5.49	31	254	
WP-11	2.99	—	6.75	15.75	2.23	69	189	
WP-12	4.31	—	6.29	15.78	3.27	108	126	
WP-13		Bent over	—	—	—	—	—	—
WP-14	2.82	—	6.95	16.23	6.82	56	257	
WP-15	3.16	—	6.89	15.05	9.31	47	181	
WP-16R	4.02	—	8.81	11.87	2.53	391	60	
WP-17R	4.80	—	6.53	12.37	2.84	140	28	
WP-18R	2.35	—	6.54	14.07	10.61	156	195	
WP-20		Destroyed	—	—	—	—	—	—
WP-21	4.96	—	6.08	12.60	2.51	101	136	
WP-22	3.89	—	11.25	12.61	3.00	1041	-51	

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: BDH	Date: 6/16/98	Time:
Weather: Cloudy, humid	Equipment: YSI 6000	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Bottom
MW54	3.05	—	6.96	15.84	5.33	104	261	
MW61R	3.37	—	7.10	16.06	6.74	109	252	
MW44	1.78	—	6.96	15.75	5.54	54	165	
MW211	3.89	—	6.44	15.87	2.47	109	135	
MW213	4.01	—	6.87	15.34	8.21	40	119	
MW51	3.15	—	7.12	13.41	9.26	40	134	
MW49	4.60	—	6.69	12.72	3.77	71	156	
MW58	5.55	—	6.63	11.40	5.28	52	159	
MW43	4.05	—	6.61	15.49	9.82	29	163	
MW62	7.71	—	7.06	8.57	3.20	65	189	

Comments:

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: SYC, RH	Date: 6/30/98	Time:
Weather: 65°, overcast, humid	Equipment: YSI-600 YL, interface meter	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
WP-1	3.59	—	6.21	18.51	5.42	181	136		
WP-2	4.63	—	6.02	17.05	4.05	208	121		
WP-3	3.09	—	6.15	15.64	3.20	61	105		
WP-4	3.89	—	6.25	18.35	3.98	122	107		
WP-5	4.75	—	6.34	14.18	3.54	64	186		
WP-6	3.51	—	6.41	16.20	4.20	39	89		
WP-7	3.73	—	6.09	17.90	2.90	204	112		
WP-8	3.79	—	6.02	16.91	2.22	293	114		
WP-9	3.70	—	6.24	16.58	5.36	147	112		
WP-10	3.65	—	6.82	18.08	5.70	40	187		
WP-11	4.24	—	6.08	17.30	5.13	129	116		
WP-12	4.92	—	5.86	16.96	3.15	174	145		
WP-13	destroyed								
WP-14	4.44	—	6.96	17.35	5.33	72	183		
WP-15	4.41	—	6.36	16.58	9.62	41	98		
WP-16R	1.26	—	8.90	14.12	6.64	432	83		
WP-17R	5.18	—	6.08	13.79	8.69	178	176		
WP-18R	4.49	—	7.64	11.87	9.47	166	-72		
WP-20	destroyed								
WP-21	4.85	—	8.27	13.90	6.55	209	-160		
WP-22	4.68	sheen	10.43	14.30	4.96	1080	296		

EA 5120 0794-7

EA Engineering, Science, and Technology

FIELD RECORD OF WATER QUALITY PARAMETER ANALYSIS

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: RH, SYC	Date: 6/30/98	Time:
Weather: Overcast, 65°	Equipment: interface meter YSI-600	

Location	Depth to Water (ft)	Depth to Product (ft)	pH	Temperature (°C)	Dissolved Oxygen (mg/L)	Conductivity (μhmos)	Redox (mV)	Riser	Bottom
MW-54	4.57	—	7.54	16.43	6.14	87	168		
61R	3.87	—	6.38	17.71	4.59	117	145		
62	7.97	—	6.37	8.81	4.07	72	142		
44	2.07	—	6.61	16.47	6.59	58	79		
43	5.51	—	6.26	17.34	8.92	39	133		
58	5.74	—	6.95	13.96	5.85	52	121		
211	4.95	—	9.40	17.26	4.14	132	66		
213	4.18	—	6.53	16.73	7.72	43	105		
49	5.50	—	6.11	14.17	5.82	101	164		
51	3.45	—	6.18	14.91	7.00	56	129		

Comments:

Appendix B

Field Record of Biosparging
Well Point Monitoring Forms

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: B Anderson	Date: 1/22/98	Time:
Weather: clear cold	Instrument(s): GA-90, TVA-1000	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	38	0.1	0	0	21.5	
WP-2	2360	242	.3	.2	21.0	
WP-3	54.0	14.0	0	.9	21.1	
WP-4	426	102	0	0	21.4	
WP-5	2.75	.2	.0	.8	19.5	
WP-6	38.6	1.6	0	.3	21.3	
WP-7	22.7	5.8	0	0	21.5	
WP-8	11.4	0.6	0	.1	21.0	
WP-9	0	1.6	0	0	21.2	
WP-10	0	0	.1	0	21.5	
WP-11	13.2	2.4	0	0	21.5	
WP-12	0	0.2	0	.2	20.4	
WP-13	0	1.1	0	0	21.2	
WP-14	0	0.1	0	0	21.5	
WP-15	0	0	0	0	21.5	
WP-16R	0	0	0	0	21.5	
WP-17R	0	0	0	0	21.5	
WP-18R	0	0	0	0	21.5	
WP-20	0	0	0	.2	20.9	
WP-21	0	0	0	0	21.5	
WP-22	0	0	0	0	21.5	

.1% 0 21.5

EA Engineering, Science, and Technology

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: MDC	Date: 2/15/98	Time:
Weather: SUNNY 70F 20MPH WIND	Instrument(s): GA-90, TVA-1000	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	0	0	0	0	21.1	
WP-2	650	74	0.4	0.8	19.9	
WP-3	30	2	0.1	0.2	20.6	
WP-4	31	1	0.1	0	20.6	
WP-5	0	0	0	0	21.5	
WP-6	0	0	0.1	0	20.9	
WP-7	102	2.5	0.2	0	20.8	
WP-8	0	0	0.1	0	20.5	
WP-9	0	0	0.1	0	20.6	
WP-10	50	1	0	0.1	21.2	
WP-11	600	55	0.7	0	19.8	
WP-12	52	5	0.1	0.1	20.0	
WP-13	CAN NOT OPEN					
WP-14	0	0	0	0	20.1	
WP-15	0	0	0.1	0.1	19.8	
WP-16R	0	0	0	0	21.5	
WP-17R	0	0	0	0	21.5	
WP-18R	0	0	0	0	21.5	
~~WP-19~~	X	X	X	X	X	
WP-20	0	0	0.1	0.0	20.2	
WP-21	0	0	0	0	21.5	
WP-22	0	0	0	0	21.5	

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: KR, SAP	Date: 3/18/98	Time: 900
Weather: Sunny, 40°	Instrument(s): TVA, Landtec	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	8.64	2.54	0	0	21.3	
WP-2	576	209	0	0	21.3	
WP-3	3.98	2.10	0	0.3	21.0	
WP-4	1.140	82.87	0	0	21.3	
WP-5	9.61	4.04	0	0	21.3	
WP-6	10	5.60	0	0	21.2	
WP-7	55.54	14.89	0	0	21.2	
WP-8	868	5 31	0	0	21.3	
WP-9	0.81	-0.48 [b]	0	0	21.3	
WP-10	1.98	0.87	0	0	21.3	
WP-11	1.90	-0.30 [b]	0	0	21.3	
WP-12	3.50	1.	0	0	21.2	
WP-13	1.00	-0.66 [b]	0	0	21.3	
WP-14	1.83	0.89	0	0	21.3	
WP-15	0.83	-0.37 [b]	0	0	21.3	
WP-16R	0.92	-0.70 [b]	0	0	21.3	
WP-17R	0.95	-0.77 [b]	~~0~~ 0	~~0~~ 0	~~21.3~~ 21.3	
WP-18R	0.71	-0.45 [b]	0	0	27.3	
WP-20	1.22	-0.46 [b]	0	0	21.3	
WP-21	2.07	0.61	0	0	21.3	
WP-22	5.26	2.45	0	0	21.3	

b - NEGATIVE READING RECORDED IS NORMAL DEFLECTION OF METER BELOW ZERO. CORRECT LEVEL IS ZERO.

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: M. CHASE	Date: 4/25/98	Time:
Weather: RAIN	Instrument(s): TVA 1000 GA 90	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	0	0	0	0	21.0	
WP-2	222	60	0	0.2	20.9	
WP-3	10	1	0	0.7	20.8	
WP-4						RAIN READINGS CURTAILED
WP-5	30	4	0	0	21.1	
WP-6	4	1	0	0.1	21.0	
WP-7	2438	38	0.2	0.1	20.9	
WP-8						RAIN READINGS CURTAILED
WP-9						" " "
WP-10	0	0	0	0	21.1	
WP-11						RAIN READINGS CURTAILED
WP-12						
WP-13						
WP-14						
WP-15						
WP-16R						
WP-17R						
WP-18R						
WP-20						
WP-21						
WP-22						

Stopped taking readings because it started to rain

EA Engineering, Science, and Technology

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: BH, BA	Date: 7 MAY 98	Time:
Weather: HEAVY RAIN	Instrument(s): TVA1000 / GA90	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1						HEAVY RAIN
WP-2						NO READINGS TAKEN
WP-3						
WP-4						
WP-5						
WP-6						
WP-7						
WP-8						
WP-9						
WP-10						
WP-11						
WP-12						
WP-13						
WP-14						
WP-15						
WP-16R						
WP-17R						
WP-18R						
WP-19	X	X	X	X	X	
WP-20						
WP-21						
WP-22						

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: KI	Date: 5/21/98	Time: 0730
Weather: CLEAR, 70°F	Instrument(s): YSI-610-DM, TVA-1000, SOLINST-INTERFACE PROBE, GA-90	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	0.25	34	0	0	21.5	
WP-2	347	112	0	0	21.5	
WP-3	9	23	0	0.1	21.3	
WP-4	134	32	0	0	21.8	
WP-5	17	42	0	0	21.5	
WP-6	~~15~~ 6	18	0	00	21.5	
WP-7	400	26	0.2	0	21.7	
WP-8	2.5	0.4	0.0	0	22.0	
WP-9	0.5	18	0	0	22.1	
WP-10	0.4	2.5	0	0	21.5	
WP-11	6	1	0.1	0	21.8	
WP-12	1	2	0.1	0.2	22.1	
WP-13	1	0	0	0	~~20.9~~	
WP-14	0.1	18.2	0.0	0	21.4	
WP-15	1	0.5	0.1	0.3	21.4	
WP-16R	6	0.5	0	0	21.5	
WP-17R	1	0	0	0	21.6	
WP-18R	0.5	3	0	0	21.5	
WP-20	1.5	0.7	0.0	0	21.6	
WP-21	1	0	0	0	21.5	
WP-22	4	0	0	0	21.6	

EA Engineering, Science, and Technology

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: BDA	Date: 6/16/98	Time: 0810
Weather: Overcast, Rain 75°	Instrument(s): TVA 1000, GA 90	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	87	0	0	0	20.8	
WP-2	5,420	270	2.7	.5	19.7	
WP-3	36	0 (a)	0	0.2	20.8	
WP-4	1%	120	0	1.0	18.8	
WP-5	226	3	0.1	0.9	20.5	
WP-6	35	8	0	.1	20.8	
WP-7	4,230	225	.3	.1	20.8	
WP-8	7,860	330	0	0	20.6	
WP-9	2	- (a)	0	0	20.8	
WP-10	1	6	0	0	20.8	
WP-11	65	4	0	0	20.8	
WP-12	5	0	.1	6.6	12.7	
WP-13					20.8	Bent over
WP-14	1	7	0	0	20.8	
WP-15	5	3	0	.5	20.5	
WP-16R						
WP-17R						
WP-18R						
WP-19						
WP-20	Destroyed					
WP-21						
WP-22						

(a) PID not reading - Humidity/Rain

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: MDC	Date: 2115	Time:
Weather: Sunny 7°F 20 mph wind	Instrument(s): GA-90, TVA-1000	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	0	0	0	0	21.1	
WP-2	650	74	0.~~004~~	0.~~8~~	19.9	
WP-3	30	2	0.1	0.2	20.6	
WP-4	31	1	0.1	0	20.6	
WP-5	0	0	0	0	21.5	
WP-6	0	0	0.1	0	20.9	
WP-7	102	25	0.2	0	20.8	
WP-8	0	0	0.1	0	20.5	
WP-9	0	0	.1	0	20.16	
WP-10	50	1	0	.1	21.2	
WP-11	600	55	0.7	0	19.8	
WP-12	52	5	0.1	0.1	20.0	
WP-13	can	not open				
WP-14	0	0	0	0	20.1	
WP-15	0~~0~~0	~~0~~	~~19.3~~	0.1	19.8	
WP-16R	—					
WP-17R	—					
WP-18R	—					
WP-20	0	0	0.1	0.0	20.2	
WP-21	—					
WP-22	—					

FIELD RECORD OF BIOSPARGING WELL POINT MONITORING

Biosparging System, Old Navy Fuel Farm, Naval Air Station, Brunswick Maine

EA Personnel: BDA	Date: 6/16/98	Time: 0810
Weather: overcast, Rain 75°	Instrument(s): TVA 1000, GA 90	

Location	FID TVH (ppm_v)	PID TVH (ppm_v)	CH_4	CO_2	O_2	Comments
WP-1	87	0	0	0	20.8	
WP-2	5,420	270	2.7	.5	19.7	
WP-3	36	0@	0	0.2	20.8	
WP-4	1%	120	0	1.0	18.8	
WP-5	226	3	0.1	0.9	20.5	
WP-6	35	0	0	.1	20.8	
WP-7	4230	225	.3	.1	20.8	
WP-8	7860	330	0	0	20.6	
WP-9	2	—@	0	0	20.8	
WP-10	1	6	0	0	20.8	
WP-11	65	4	0	0	20.8	
WP-12	5	0	.1	6.6	12.7	
WP-13	~~Bentonite~~	~~0@~~	~~0~~	~~0~~	~~20.8~~	Bentonite
WP-14	1	7	0	0	20.8	
WP-15	5	3	0	.5	20.5	
WP-16R						
WP-17R						
WP-18R						
WP-20	Destroyed					
WP-21						
WP-22						

@ PID not reading - humidity/rain

Appendix C

Field Record of Well Gauging, Purging, and Sampling Forms

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	fuel farm	Project Number:	29600.33
Well ID:	WP-1	Well Lock Status:	NA
Well Condition:	good	Weather:	partly sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	8.23	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.28	C. Well Volume (L)	.79
E. Liquid Depth (ft) (A-B)	4.95	E. Three Well Volumes (L)	2.38

Parameter	Beginning	1	2	3	4	5
Time (min.)	0830					
Depth to Water (ft)	3.28					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.80					
Temperature (°C)	13.43					
Conductivity (μmhos/cm)	137					
Dissolved Oxygen (mg/L)	2.60					
Turbidity (NTU)	—					
eH (mV)	212					

Total Quantity of Water Removed (L):	2.52		
Samplers:	BA/RC	Sampling Time (Start/End):	1400
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	VASBFF04WP007		
Sample Parameters:	VOC, TPH gro, TPH dro, Fe, Mn		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.35
Well ID:	WP-02	Well Lock Status:	good
Well Condition:	good	Weather:	cloudy.

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump.	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	270.0

WELL VOLUME

A. Well Depth (ft):	8.22	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	4.02	C. Well Volume (L)	.672
E. Liquid Depth (ft) (A-B)	4.20	E. Three Well Volumes (L)	2.016

Parameter	Beginning	1	2	3	4	5
Time (min.)	0850					
Depth to Water (ft)	4.02					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.86					
Temperature (°C)	16.06					
Conductivity (μmhos/cm)	65					
Dissolved Oxygen (mg/L)	3.62					
Turbidity (NTU)	—					
eH (mV)	172					

Total Quantity of Water Removed (L):	1well vol + 2.52 sample.		
Samplers:	BDA	Sampling Time (Start/End):	0900 - 0915
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF024 WP001 MS/MSD (RB-0830)		
Sample Parameters:	VOC, TPH GRO TPH DRO, Fe Mn		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	fuel farm	Project Number:	29600.35
Well ID:	WP-3	Well Lock Status:	NA
Well Condition:	good	Weather:	sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	7.51	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	2.96	C. Well Volume (L)	.73
E. Liquid Depth (ft) (A-B)	4.55	E. Three Well Volumes	2.14

Parameter	Beginning	1	2	3	4	5
Time (min.)	1600					
Depth to Water (ft)	2.96					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.88					
Temperature (°C)	15.52					
Conductivity (μmhos/cm)	50					
Dissolved Oxygen (mg/L)	4.73					
Turbidity (NTU)	—					
eH (mV)	174					

Total Quantity of Water Removed (L):	3 L		
Samplers:	BA/RC	Sampling Time (Start/End):	1655
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP017		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.35
Well ID:	WP-4	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	120

WELL VOLUME

A. Well Depth (ft):	7.62	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	2.49	C. Well Volume (L)	0.82
E. Liquid Depth (ft) (A-B)	5.13	E. Three Well Volumes	2.46

Parameter	Beginning	1	2	3	4	5
Time (min.)	1115					
Depth to Water (ft)	2.49					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.61					
Temperature (°C)	16.01					
Conductivity (μmhos/cm)	62					
Dissolved Oxygen (mg/L)	3.41					
Turbidity (NTU)	—					
eH (mV)	172					

Total Quantity of Water Removed (L):	4+2 = 6		
Samplers:	BA/RC	Sampling Time (Start/End):	1615
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP014	NASBFF04WP XD2	
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:	Collected Dup 2		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	fuel farm	Project Number:	29600.35
Well ID:	WP-5	Well Lock Status:	NA
Well Condition:	good	Weather:	cloudy 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	3

WELL VOLUME

A. Well Depth (ft):	7.74	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.71	C. Well Volume (L)	0.64
E. Liquid Depth (ft) (A-B)	4.03	E. Three Well Volumes (L)	1.93

Parameter	Beginning	1	2	3	4	5
Time (min.)	0845					
Depth to Water (ft)	3.71					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.90					
Temperature (°C)	16.21					
Conductivity (μmhos/cm)	36					
Dissolved Oxygen (mg/L)	6.88					
Turbidity (NTU)	—					
eH (mV)	169					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1345
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFF04WP006		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	fuel farm	Project Number:	29600.35
Well ID:	WP-6	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60s

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	8

WELL VOLUME

A. Well Depth (ft):	7.62	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	2.35	C. Well Volume (L)	0.84
E. Liquid Depth (ft) (A-B)	5.27	E. Three Well Volumes (L)	2.55

Parameter	Beginning	1	2	3	4	5
Time (min.)	915					
Depth to Water (ft)	2.35					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.85					
Temperature (°C)	15.49					
Conductivity (μmhos/cm)	25					
Dissolved Oxygen (mg/L)	4.27					
Turbidity (NTU)	—					
eH (mV)	175					

Total Quantity of Water Removed (L):	4+2 = 6		
Samplers:	BA/RC	Sampling Time (Start/End):	1415
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP008	NASBFF04WPXD1	
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:	Collected Dup 1		

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	fuel farm	Project Number:	29600.35
Well ID:	WP-7	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	225

WELL VOLUME

A. Well Depth (ft):	7.78	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.00	C. Well Volume (L)	0.76
E. Liquid Depth (ft) (A-B)	4.78	E. Three Well Volumes	2.29

Parameter	Beginning	1	2	3	4	5
Time (min.)	1000					
Depth to Water (ft)	3.00					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.65					
Temperature (°C)	14.33					
Conductivity (μmhos/cm)	123					
Dissolved Oxygen (mg/L)	3.45					
Turbidity (NTU)	—					
eH (mV)	175					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1505
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP011		
Sample Parameters:	VOC, TPH gro, TPH dro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	24600.35
Well ID:	WP-8	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	330

WELL VOLUME

A. Well Depth (ft):	7.54	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.03	C. Well Volume (L)	0.72
E. Liquid Depth (ft) (A-B)	4.51	E. Three Well Volumes	2.16

Parameter	Beginning	1	2	3	4	5
Time (min.)	1015					
Depth to Water (ft)	3.03					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.55					
Temperature (°C)	13.84					
Conductivity (μmhos/cm)	221					
Dissolved Oxygen (mg/L)	1.96					
Turbidity (NTU)	—					
eH (mV)	146					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1530
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP012		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	fuel farm	Project Number:	29600.35
Well ID:	WP-9	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	7.80	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.05	C. Well Volume (L)	0.76
E. Liquid Depth (ft) (A-B)	4.75	E. Three Well Volumes	2.28

Parameter	Beginning	1	2	3	4	5
Time (min.)	1100					
Depth to Water (ft)	3.05					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.48					
Temperature (°C)	15.97					
Conductivity (μmhos/cm)	113					
Dissolved Oxygen (mg/L)	8.24					
Turbidity (NTU)	—					
eH (mV)	177					

Total Quantity of Water Removed (L):	4.0		
Samplers:	BA/RC	Sampling Time (Start/End):	1600
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFF04WPD13		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel farm	Project Number:	24600.35
Well ID:	WP10	Well Lock Status:	NA
Well Condition:	good	Weather:	cloudy 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	6

WELL VOLUME

A. Well Depth (ft):	7.96	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	1.68	C. Well Volume (L)	1.00
E. Liquid Depth (ft) (A-B)	6.28	E. Three Well Volumes (L)	3.00

Parameter	Beginning	1	2	3	4	5
Time (min.)	0815					
Depth to Water (ft)	1.68					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.91					
Temperature (°C)	16.34					
Conductivity (μmhos/cm)	31					
Dissolved Oxygen (mg/L)	3.49					
Turbidity (NTU)	—					
eH (mV)	254					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1330
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP005		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel farm	Project Number:	29600.35
Well ID:	WP-11	Well Lock Status:	NA
Well Condition:	Good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	4

WELL VOLUME

A. Well Depth (ft):	7.62	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	2.99	C. Well Volume (L)	0.74
E. Liquid Depth (ft) (A-B)	4.63	E. Three Well Volumes	2.22

Parameter	Beginning	1	2	3	4	5
Time (min.)	0945					
Depth to Water (ft)	2.99					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.75					
Temperature (°C)	15.75					
Conductivity (μmhos/cm)	69					
Dissolved Oxygen (mg/L)	2.23					
Turbidity (NTU)	—					
eH (mV)	189					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1455
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04 WP010		
Sample Parameters:	VOC TPH dro, TPH gro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel FARM	Project Number:	29600.35
Well ID:	WP-12	Well Lock Status:	—
Well Condition:	Good	Weather:	cloudy, humid

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	ISCO pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	7.80	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	4.31	C. Well Volume (L)	0.56
E. Liquid Depth (ft) (A-B)	3.49	E. Three Well Volumes (L)	1.67

Parameter	Beginning	1	2	3	4	5
Time (min.)	1045					
Depth to Water (ft)	4.31					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.29					
Temperature (°C)	15.78					
Conductivity (μmhos/cm)	168					
Dissolved Oxygen (mg/L)	3.87					
Turbidity (NTU)	NA					
eH (mV)	176					

Total Quantity of Water Removed (L):	4		
Samplers:	BDA	Sampling Time (Start/End):	1045
Sampling Date:	6/16/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFF04 WP002		
Sample Parameters:	VOC, TPH GRO, TPH DRO, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.35
Well ID:	WP-13	Well Lock Status:	NA
Well Condition:	Broken - Bent	Weather:	cloudy, humid

Gauge Date:	10/16/98 BA *	Gauge Time:	
Sounding Method:		Measurement Ref:	
Stick Up/Down (ft):		Well Diameter (in.):	

Purge Date:	NA	Purge Time:	
Purge Method:		Field Personnel:	BDH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	7.72*	D. Well Volume/ft (L):	
B. Depth to Water (ft):		C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes (L)	

Parameter	Beginning	1	2	3	4	5
Time (min.)						
Depth to Water (ft)						
Purge Rate (l/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Total Quantity of Water Removed (L):			
Samplers:		Sampling Time (Start/End):	
Sampling Date:		Decontamination Fluids Used:	
Sample Type:		Sample Preservatives:	
Sample Bottle IDs:			
Sample Parameters:			
Comments and Observations:	*unable to guage or sample - 2" well point bent		

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	24600.35
Well ID:	WP-14	Well Lock Status:	not locked
Well Condition:	good	Weather:	Some sun 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/18/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	7

WELL VOLUME

A. Well Depth (ft):	7.97	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	2.82	C. Well Volume (L)	0.82
E. Liquid Depth (ft) (A-B)	5.15	E. Three Well Volumes (L)	2.47

Parameter	Beginning	1	2	3	4	5
Time (min.)	0800					
Depth to Water (ft)	2.82					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.95					
Temperature (°C)	16.23					
Conductivity (μmhos/cm)	56					
Dissolved Oxygen (mg/L)	6.82					
Turbidity (NTU)	~					
eH (mV)	257					

Total Quantity of Water Removed (L):	well vol. x = 4		
Samplers:	BA RC	Sampling Time (Start/End):	1320 - 1325
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP004		
Sample Parameters:	VOC, TPH gro, TPH dro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.35
Well ID:	WP-15	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0530
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	5min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	3

WELL VOLUME

A. Well Depth (ft):	7.69	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.16	C. Well Volume (L)	0.72
E. Liquid Depth (ft) (A-B)	4.53	E. Three Well Volumes (L)	2.17

Parameter	Beginning	1	2	3	4	5
Time (min.)	0930					
Depth to Water (ft)	3.16					
Purge Rate (l/min)	–					
Volume Purged (L)	–					
pH	6.89					
Temperature (°C)	15.05					
Conductivity (μmhos/cm)	47					
Dissolved Oxygen (mg/L)	9.31					
Turbidity (NTU)	–					
eH (mV)	181					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1440
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04 WP009		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Reel Farm	Project Number:	29600.33
Well ID:	WP-16R	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2" & 1"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA - open pipe

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	0.04
B. Depth to Water (ft):	4.02	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)	1030					
Depth to Water (ft)	4.02					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	8.81					
Temperature (°C)	11.87					
Conductivity (μmhos/cm)	391					
Dissolved Oxygen (mg/L)	2.53					
Turbidity (NTU)	—					
eH (mV)	60					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1645
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	Grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFF04 WP016		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29650.35
Well ID:	WP 17R	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	1"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco pump.	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA - open pipe

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	0.04
B. Depth to Water (ft):	4.80	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)	1230					
Depth to Water (ft)	4.80					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.53					
Temperature (°C)	12.37					
Conductivity (μmhos/cm)	140					
Dissolved Oxygen (mg/L)	2.84					
Turbidity (NTU)	—					
eH (mV)	28					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1630
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP015		
Sample Parameters:	VOC, TPH gro, TPH dro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29690.35
Well ID:	WP-18R	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 60's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	1"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco Pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA - open pipe

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	0.04
B. Depth to Water (ft):	2.35	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes	

Parameter	Beginning	1	2	3	4	5
Time (min.)	1530					
Depth to Water (ft)	2.33					
Purge Rate (gpm)	—					
Volume Purged (gal)	—					
pH	6.54					
Temperature (°C)	14.07					
Conductivity (μmhos/cm)	156					
Dissolved Oxygen (mg/L)	10.61					
Turbidity (NTU)	—					
eH (mV)	195					

Total Quantity of Water Removed (L):	4		
Samplers:	BA/RC	Sampling Time (Start/End):	1730
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF041WP018		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe, Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.35
Well ID:	WP-20	Well Lock Status:	NA
Well Condition:	Broken pipe	Weather:	cloudy, humid

Gauge Date:	10/16/95 *	Gauge Time:	
Sounding Method:		Measurement Ref:	
Stick Up/Down (ft):		Well Diameter (in.):	

Purge Date:		Purge Time:	
Purge Method:		Field Personnel:	BDH
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	
B. Depth to Water (ft):		C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes (L)	

Parameter	Beginning	1	2	3	4	5
Time (min.)						
Depth to Water (ft)						
Purge Rate (l/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Total Quantity of Water Removed (L):			
Samplers:		Sampling Time (Start/End):	
Sampling Date:		Decontamination Fluids Used:	
Sample Type:		Sample Preservatives:	
Sample Bottle IDs:			
Sample Parameters:			

Comments and Observations: * not able to guge a sample - Broken at grn surface. BH

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.32
Well ID:	WP-21	Well Lock Status:	NA
Well Condition:	good	Weather:	Sunny 50's

Gauge Date:	6/16/98	Gauge Time:	0830
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	1"

Purge Date:	6/17/98	Purge Time:	5 min
Purge Method:	Isco Pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	NA - open pipe

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	0.04
B. Depth to Water (ft):	4.96	C. Well Volume (L)	
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes (L)	

Parameter	Beginning	1	2	3	4	5
Time (min.)	1530					
Depth to Water (ft)	4.96					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	6.08					
Temperature (°C)	12.60					
Conductivity (μmhos/cm)	101					
Dissolved Oxygen (mg/L)	2.51					
Turbidity (NTU)	—					
eH (mV)	136					

Total Quantity of Water Removed (L):	9		
Samplers:	BA/RC	Sampling Time (Start/End):	1745
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04WP019		
Sample Parameters:	VOC, TPH dro, TPH gro, Fe/Mn		
Comments and Observations:			

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.35
Well ID:	WP-22	Well Lock Status:	NA
Well Condition:	good	Weather:	cloudy, humid

Gauge Date:	6/16/98	Gauge Time:	835
Sounding Method:	Slope Indicator	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	1"

Purge Date:	6/18/98	Purge Time:	5min
Purge Method:	ISCO pump	Field Personnel:	BDA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	N.A - green pipe

WELL VOLUME

A. Well Depth (ft):		D. Well Volume/ft (L):	0.04
B. Depth to Water (ft):	3.89	C. Well Volume (L)	~~EVENT~~
E. Liquid Depth (ft) (A-B)		E. Three Well Volumes (L)	

Parameter	Beginning	1	2	3	4	5
Time (min.)	0820					
Depth to Water (ft)	3.89					
Purge Rate (l/min)	—					
Volume Purged (L)	—					
pH	11.25					
Temperature (°C)	12.61					
Conductivity (μmhos/cm)	1041					
Dissolved Oxygen (mg/L)	3.00					
Turbidity (NTU)	—					
eH (mV)	-51					

Total Quantity of Water Removed (L):	4		
Samplers:	BDA	Sampling Time (Start/End):	1110 - 1115
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFE04WP003		
Sample Parameters:	VOC, TPH GRO, TPH DRO, Fe Mn		
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old Fuel Farm	Project Number:	2260.35
Well ID:	MW-44	Well Lock Status:	locked
Well Condition:	good	Weather:	cloudy 50's

Gauge Date:	6/28/98	Gauge Time:	0740
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/18/98	Purge Time:	743-950
Purge Method:	grundfos	Field Personnel:	BA/RC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	15.74	D. Well Volume/ft (L):	0.16
B. Depth to Water (ft):	2.66	C. Well Volume (L)	2.09
E. Liquid Depth (ft) (A-B)	13.08	E. Three Well Volumes (L)	6.28

Parameter	Beginning	1	2	3	4	5
Time (min.)	751	756	801	806	811	816
Depth to Water (ft)	2.66	2.23	2.22	2.32	2.30	2.30
Purge Rate (l/min)	2	2	2	1*	1	1
Volume Purged (L)	(5gal)	30	40	50	55	60
pH	5.70	5.81	5.80	5.81	5.81	5.81
Temperature (°C)	14.19	14.20	14.30	14.05	14.00	14.00
Conductivity (μmhos/cm)	71	63	61	57	60	60
Dissolved Oxygen (mg/L)	2.35	1.92	1.77	1.81	1.60	1.54
Turbidity (NTU)	565	419	274	271	333	455
eH (mV)	123	106	93	58	46	38

Total Quantity of Water Removed (L):	150		
Samplers:	RC/BA	Sampling Time (Start/End):	945-950
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04MW1008	NASBFF04MWX01	
Sample Parameters:	VOC, TPA gro, TPA dro		
Comments and Observations:	* unable to pump slower than 1 L/min		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Old Fuel Farm Project Number: 29600.35 Date: 6/18/98
Well ID: MW-44 Field Personnel: BA/RC

Parameter	6	7	8	9	10	11
Time (min.)	821	826	831	836	845	850
Depth to Water (ft)	2.29	2.29	2.28	2.28	2.25	2.29
Purge Rate ~~(gpm)~~ L/min BT	1	1	1	1	1	1
Volume Purged ~~(gal)~~ L BT	65	70	75	80	85	90
pH	5.81	5.81	5.81	5.81	5.77	5.82
Temperature (°C)	14.08	14.17	14.21	14.26	14.35	14.22
Conductivity (μmhos/cm)	60	60	61	61	61	61
Dissolved Oxygen (mg/L)	1.39	1.52	1.44	1.52	1.49	1.37
Turbidity (NTU)	201	230	190	190	207	140
eH (mV)	35	35	34	35	37	25

Parameter	12	13	14	15	16	17
Time (min.)	855	900	905	910	915	920
Depth to Water (ft)	2.29	2.29	2.29	2.29	2.25	2.25
Purge Rate ~~(gpm)~~ L/min BT	1	1	1	1	1	1
Volume Purged ~~(gal)~~ L BT	95	100	105	110	115	120
pH	5.81	5.81	5.81	5.82	5.81	5.82
Temperature (°C)	14.26	14.29	14.60	14.64	14.66	14.67
Conductivity (μmhos/cm)	61	61	62	61	61	62
Dissolved Oxygen (mg/L)	1.51	1.49	1.41	1.48	1.39	1.38
Turbidity (NTU)	126	126	86	95	99	116
eH (mV)	25	24	30	30	32	31

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Old Fuel Farm Project Number: 29600.35 Date: 6/18/98
Well ID: MW-44 Field Personnel: BA/RC

Parameter	6	7	8	9	10	11
Time (min.)	925	930	935	940	945	
Depth to Water (ft)	2.28	2.28	2.29	2.29	2.28	
Purge Rate (L/min)	1	1	1	1	1	
Volume Purged (L)	125	130	135	140	145	
pH	5.82	5.82	5.81	5.81	5.81	
Temperature (°C)	14.37	14.22	14.29	14.31	14.35	
Conductivity (μmhos/cm)	61	61	62	61	61	
Dissolved Oxygen (mg/L)	2.22	1.48	1.40	1.40	1.40	
Turbidity (NTU)	113	96	115	189	546 ⊛	
eH (mV)	24	24	23	23	23	

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations:
Collected Sample + Dup 1 (12 VOA vials 4 amber)
⊛ Water from cell is clear. On cleaning flow cell turbidity reading at 90 turbidity increase in cup.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old fuel farm	Project Number:	24600.35
Well ID:	MW-49	Well Lock Status:	locked
Well Condition:	good	Weather:	cloudy 50s

Gauge Date:	6/17/98	Gauge Time:	1335
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	1340 - 1415
Purge Method:	grundfos	Field Personnel:	RC/BA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	14.40	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	4.19	C. Well Volume (L)	1.63
E. Liquid Depth (ft) (A-B)	10.21	E. Three Well Volumes (L)	4.90

Parameter	Beginning	1	2	3	4	5
Time (min.)	1342	1347	1352	1357	1402	1405
Depth to Water (ft)	4.39	4.39	4.37	4.43	4.35	4.35
Purge Rate (l/min)	0.75	0.8	0.8	0.8	0.6	0.6
Volume Purged (L)	1.5	5.5	9.5	13.5	17.5	20.5
pH	5.29	5.67	5.71	5.72	5.73	5.73
Temperature (°C)	13.44	15.06	15.7	16.33	16.37	16.7
Conductivity (µmhos/cm)	65	74	74	77	76	77
Dissolved Oxygen (mg/L)	1.39	0.61	0.52	0.44	0.42	0.36
Turbidity (NTU)	23.9	18.8	18	19	3	3
eH (mV)	105	74	55	46	46	45

Total Quantity of Water Removed (L):	26		
Samplers:	RC/BA	Sampling Time (Start/End):	1410 - 1415
Sampling Date:	6/17/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFF04MW005		
Sample Parameters:	VOC, TPH gro, TPH dro		
Comments and Observations:			

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Old Steel Farm	Project No.: 7600.35	Date: 6/17/98
Well ID: NW 49	Field Personnel: RC/BA	

Parameter	6	7	8	9	10	11
Time (min.)	1408					
Depth to Water (ft)	4.37					
Purge Rate (L/min)	0.6					
Volume Purged (L)	23.5					
pH	5.73					
Temperature (°C)	16.9					
Conductivity (μmhos/cm)	77					
Dissolved Oxygen (mg/L)	0.36					
Turbidity (NTU)	3					
Eh (mv)	43					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old Fuel Farm	Project Number:	29600.35
Well ID:	MW-51	Well Lock Status:	Good
Well Condition:	Good	Weather:	cloudy, rain 50s

Gauge Date:	6/17/98	Gauge Time:	1130
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2

Purge Date:	6/17/98	Purge Time:	1135 → 1228
Purge Method:	Low Flow	Field Personnel:	RC, BA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	16.00	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	2.97	C. Well Volume (L)	2.08
E. Liquid Depth (ft) (A-B)	13.03	E. Three Well Volumes	6.25

Parameter	Beginning	1	2	3	4	5
Time (min.)	1135	1140	1145	1150	1155	1200
Depth to Water (ft)	3.51	3.48	3.51	3.51	3.51	3.51
Purge Rate ~~(gpm)~~ L/min	0.8	0.8	0.8	0.8	0.8	0.8
Volume Purged ~~(gal)~~ L	0	4	8	12	16	20
pH	5.99	5.96	5.94	5.94	5.94	5.96
Temperature (°C)	10.92	12.18	12.89	13.02	13.19	13.22
Conductivity (μmhos/cm)	60	54	55	55	56	56
Dissolved Oxygen (mg/L)	3.09	4.22	4.65	5.02	5.09	5.29
Turbidity (NTU)	178	530	404	85	30	16
eH (mV)	105	117	123	126	130	135

Total Quantity of Water Removed (L):	36 L		
Samplers:	RC, BA	Sampling Time (Start/End):	1220 - 1228
Sampling Date:	6/17/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	↑		
Sample Parameters:	NASBFF04MW003	VOC, TPH GRO, TPH DRO	
Comments and Observations:			

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Old fuel farm	Project No.: 29600.35	Date: 6/17/98
Well ID: MW 51	Field Personnel: BA, RC	

Parameter	6	7	8	9	10	11
Time (min.)	1205	1208	1211	1214	1217	
Depth to Water (ft)	3.51	3.65	3.65	3.65	3.65	
Purge Rate (L/min)	0.8	0.8	0.8	0.8	0.8	
Volume Purged (L)	24	26.4	28.8	31.2	33.6	
pH	5.97	5.99	5.98	5.99	5.99	
Temperature (°C)	13.44	12.92	12.85	13.01	12.85	
Conductivity (µmhos/cm)	57	60	~~75~~ 57	57	57	
Dissolved Oxygen (mg/L)	5.43	5.67	5.78	5.84	5.86	
Turbidity (NTU)	89	13	7	5	5	
Eh (mv)	130	139	136	136	138	

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (µmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old Fuel Farm	Project Number:	29600.35
Well ID:	MW-054	Well Lock Status:	good
Well Condition:	good	Weather:	cloudy / rain 56°

Gauge Date:	6/16/98	Gauge Time:	1411
Sounding Method:	interface probe	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/16/98	Purge Time:	1427 - 1510
Purge Method:	grundfos - low flow	Field Personnel:	B. Andersen, R. Clark
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	~~16.50~~ 16.14 Bt	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	2.92	C. Well Volume (L)	2.11
E. Liquid Depth (ft) (A-B)	13.22	E. Three Well Volumes	6.34

Parameter	Beginning	1	2	3	4	5
Time (min.)	1430	1435	1440	1445	1450	1455
Depth to Water (ft)	3.28	3.30	3.30	3.30	3.31	3.31
Purge Rate (~~gpm~~) L/min Bt	1.6 L/min	1.6	1.6	1.6	1.6	1.6
Volume Purged (~~gal~~) L Bt	~2 L	10	18	26	34	42
pH	5.08	5.03	5.03	505	5.10	5.13
Temperature (°C)	11.82	12.36	12.44	12.44	12.37	12.31
Conductivity (μmhos/cm)	105.00	106.00	106.00	104.00	103.00	103.00
Dissolved Oxygen (mg/L)	8.01	5.01	3.83	3.01	2.40	2.06
Turbidity (NTU)	~~0~~ 0	0	0	0	0	0
eH (mV)	317.3	304.3	294.6	286.0	278.0	271.4

Total Quantity of Water Removed (L):	50		
Samplers:	BDA, RC	Sampling Time (Start/End):	1500 - 1510
Sampling Date:	6/16/98	Decontamination Fluids Used:	None
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	WASB FF04MW001 MS/MSD		
Sample Parameters:	VOC, TPH GRO, TPH DRO		

Comments and Observations:

1428 pump on water slightly orange - cleared up w/in 2 minutes unable to purge slower than 1.6 L/min.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old Fuel Farm	Project Number:	29600.35
Well ID:	MW 58	Well Lock Status:	yes
Well Condition:	good	Weather:	Cloudy muggy 50's

Gauge Date:	6/17/98	Gauge Time:	1238
Sounding Method:	Interface probe	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	1240 - 1335
Purge Method:	grundfos	Field Personnel:	BA/RC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	16.56	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	5.50	C. Well Volume (L)	1.77
E. Liquid Depth (ft) (A-B)	11.06	E. Three Well Volumes (L)	5.31

Parameter	Beginning	1	2	3	4	5
Time (min.)	1245	1250	1255	1300	1305	1310
Depth to Water (ft)	5.74	5.70	5.70	5.70	5.80	5.96
Purge Rate (l/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	2gal 8	10	12	14	16	18
pH	5.52	5.79	5.82	5.82	5.82	5.79
Temperature (°C)	12.33	12.55	12.85	13.32	13.02	13.10
Conductivity (µmhos/cm)	46	46	45	43	44	41
Dissolved Oxygen (mg/L)	1.93	1.53	2.0	2.34	2.52	3.30
Turbidity (NTU)	296	272	105	127	43	42
eH (mV)	119	112	101	100	99	97

Total Quantity of Water Removed (L):	25		
Samplers:	RC/BA	Sampling Time (Start/End):	1330 - 1335
Sampling Date:	6/17/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFF.04 MW004		
Sample Parameters:	VOC (BTEX) TPH gro, TPH dro		

Comments and Observations: Purged 2 gallons - grayish silty water
Started purge 1240

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Old Fuel Farm	Project No.: 87600.35	Date: 6/17/98
Well ID: MW 58	Field Personnel: BA/RC	

Parameter	6	7	8	9	10	11
Time (min.)	1315	1318	1321			
Depth to Water (ft)	6.01	5.97	5.97			
Purge Rate (L/min)	0.4	0.4	0.4			
Volume Purged (L)	20	21.2	22.4			
pH	5.77	5.77	5.77			
Temperature (°C)	13.6	13.6	13.6			
Conductivity (μmhos/cm)	41	41	41			
Dissolved Oxygen (mg/L)	3.22	3.29	3.38			
Turbidity (NTU)	7	2	1			
Eh (mv)	102	102	103			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old Fuel Farm	Project Number:	24600.33
Well ID:	MW 61R	Well Lock Status:	locked
Well Condition:	good	Weather:	Cloudy 50's

Gauge Date:	6/17/98	Gauge Time:	1510
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	1512 - 1658
Purge Method:	Grundfos	Field Personnel:	RC/BA
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	12.90	D. Well Volume/ft (L):	0.16
B. Depth to Water (ft):	3.40	C. Well Volume (L)	1.52
E. Liquid Depth (ft) (A-B)	9.50	E. Three Well Volumes (L)	4.56

Parameter	Beginning	1	2	3	4	5
Time (min.)	1515	1520	1525	1530	1535	1540
Depth to Water (ft)	4.40	3.80	3.88	3.83	3.83	3.83
Purge Rate (l/min)	1.4 *	1.4	1.4	1.4	1.4	1.4
Volume Purged (L)	(2.99)	15	22	29	36	43
pH	5.90	6.03	6.02	6.03	6.04	6.05
Temperature (°C)	14.43	14.44	14.49	14.47	14.44	14.83
Conductivity (μmhos/cm)	110	113	111	114	114	111
Dissolved Oxygen (mg/L)	7.92	6.52	0.75	0.14	0.05	0.13
Turbidity (NTU)	1178	882	289	227	75	93
eH (mV)	27	-31	-43	-44	-44	-43

Total Quantity of Water Removed (L):	144		
Samplers:	RC/BA	Sampling Time (Start/End):	1653 - 1658
Sampling Date:	6/17/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04 MW007		
Sample Parameters:	VOC, TPH gro, TPH dro		
Comments and Observations:	* lowest setting of pump - unable to pump slower.		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Old Fuel Farm	Project Number:	29600.33	Date:	6/17/98
Well ID:	MW61R	Field Personnel:	RC/BA		

Parameter	6	7	8	9	10	11
Time (min.)	1545	1550	1555	1600	1605	1610
Depth to Water (ft)	3.75	3.74	3.75	3.75	3.80	3.80
Purge Rate (L/min)	1.4	1.4	1.4	1.4	1.4	1.4
Volume Purged (L)	50	57	64	71	78	85
pH	6.06	6.06	6.06	6.08	6.07	6.04
Temperature (°C)	14.03	14.69	14.68	14.49	14.48	14.45
Conductivity (μmhos/cm)	115	115	115	119	114	114
Dissolved Oxygen (mg/L)	0.12	0.09	0.07	0.08	0.05	0.04
Turbidity (NTU)	79	64	59	49	51	43
eH (mV)	-44	-44	-44	-43	-42	-39

Parameter	12	13	14	15	16	17
Time (min.)	1615	1620	1625	1630	1635	1640
Depth to Water (ft)	3.79	3.79	3.80	3.80	3.80	3.85
Purge Rate (L/min)	1.4	1.4	1.4	1.4	1.4	1.4
Volume Purged (L)	92	99	106	113	120	127
pH	6.04	6.04	6.04	6.04	6.04	6.03
Temperature (°C)	14.49	14.49	14.50	14.29	14.27	14.32
Conductivity (μmhos/cm)	118	114	114	114	114	114
Dissolved Oxygen (mg/L)	0.04	0.04	0.03	0.07	0.07	0.07
Turbidity (NTU)	37	30	30	21	18	23
eH (mV)	-40	-40	-40	-40	-38	-40

Comments and Observations:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Old Fuel FARM	Project Number:	29600.35	Date:	6/17/98
Well ID:	MW-61R	Field Personnel:	RC, BA		

Parameter	6	7	8	9	10	11
Time (min.)	1645	1650				
Depth to Water (ft)	3.85	3.85				
Purge Rate (L/min)	1.4	1.4				
Volume Purged (L)	134	141				
pH	6.04	6.03				
Temperature (°C)	14.42	14.35				
Conductivity (μmhos/cm)	114	114				
Dissolved Oxygen (mg/L)	0.03	0.07				
Turbidity (NTU)	21	23				
eH (mV)	-40	-41				

Parameter	12	13	14	15	16	17
Time (min.)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
eH (mV)						

Comments and Observations: _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old Fuel Farm	Project Number:	29600.35
Well ID:	MW67	Well Lock Status:	locked
Well Condition:	good	Weather:	fog 50°

Gauge Date:	6/17/98	Gauge Time:	0745
Sounding Method:	Interface probe	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	750 - 1005
Purge Method:	grundfos	Field Personnel:	BA, RC
Ambient Air VOCs (ppm):	0	Well Mouth VOCs (ppm):	0

WELL VOLUME

A. Well Depth (ft):	16.91	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	7.67	C. Well Volume (L)	1.48
E. Liquid Depth (ft) (A-B)	9.24	E. Three Well Volumes	4.43

Parameter	Beginning	1	2	3	4	5
Time (min.)	750	755	800	805	810	815
Depth to Water (ft)	7.67	7.77	7.78	7.78	7.78	7.75
Purge Rate (~~gpm~~) ml/min	600	400	400	300	300	300
Volume Purged (~~gal~~) L	start	3	5	7	8.5	10
pH	6.13	6.01	5.97	5.96	5.96	5.96
Temperature (°C)	10.33	10.74	11.91	12.36	12.26	13.39
Conductivity (μmhos/cm)	77.0	71.0	70.0	70.0	67.0	73.0
Dissolved Oxygen (mg/L)	1.14	0.37	0.31	0.25	0.33	0.37
Turbidity (NTU)	1015.	523.3	514.0	395.8	137.0	107.8
eH (mV)	276.9	170.5	126.3	95.7	89.0	75.9

Total Quantity of Water Removed (L):	30.5		
Samplers:	RC, BA	Sampling Time (Start/End):	1000 - 1005
Sampling Date:	6/17/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCl
Sample Bottle IDs:	NASBFF04MW002		
Sample Parameters:	VOC, TPH GRO, TPH DRO MW002		
Comments and Observations:	End purge & Sample because of impending thunderstorm.		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Old Fuel Farm		Project No.: 29600.35	Date: 6/17/98
Well ID: MW62		Field Personnel: BA, RC	

Parameter	6	7	8	9	10	11
Time (min.)	820	825	830	835	840	845
Depth to Water (ft)	7.75	7.75	7.75	7.75	7.76	7.76
Purge Rate (mL/min)	300	300	300	300	300	300
Volume Purged (L)	11.5	13	12.5	15	16.5	18
pH	5.94	5.94	5.94	5.93	5.95	5.94
Temperature (°C)	13.90	14.10	13.81	14.10	12.30	12.44
Conductivity (µmhos/cm)	73.0	73	72	72	64	66
Dissolved Oxygen (mg/L)	0.52	0.54	0.73	0.71	2.22	1.42
Turbidity (NTU)	135.8	187	98	133	51	160
Eh (mv)	71.4	58	54	48	56	56

Parameter	12	13	14	15	16	17
Time (min)	850	855	900	905	910	920
Depth to Water (ft)	7.76	7.76	7.76	7.76	7.73	7.72
Purge Rate (L/min)	300	300	300	300	200	200
Volume Purged (L)	19.5	21	22.5	24	25 RL	26.5 RL
pH	5.93	5.93	5.92	5.93	5.93	5.93
Temperature (°C)	13.40	13.65	13.71	13.74	12.63	13.29
Conductivity (µmhos/cm)	70	70	70	70	56	71
Dissolved Oxygen (mg/L)	1.08	0.99	0.96	1.0	1.39	1.45
Turbidity (NTU)	122	104	101	99	35	49
Eh (mv)	53	48	49	55	58	59

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: Old Fuel Farm	Project No.: 29600.35	Date: 6/17/98
Well ID: MW62	Field Personnel: BA, RC	

Parameter	6	7 *	8	9	10	11
Time (min.)	925	930				
Depth to Water (ft)	7.72	7.72				
Purge Rate (L/min)	200	200				
Volume Purged (L)	~~28 Eff Bl~~	~~28~~				
pH	5.93	5.92				
Temperature (°C)	13.68	14.09				
Conductivity (μmhos/cm)	70	69				
Dissolved Oxygen (mg/L)	1.37	1.24				
Turbidity (NTU)	101	35				
Eh (mv)	50	51				

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS MW007 Sample ID

Sample because of Thunderstorms

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Fuel Farm	Project Number:	29600.35
Well ID:	MW 211	Well Lock Status:	good
Well Condition:	good	Weather:	clouds, warm, Humid

Gauge Date:	6/18/98	Gauge Time:	1000
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/18/98	Purge Time:	1010 - 1150
Purge Method:	Low Flow	Field Personnel:	BA, RC
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	9.87	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.74	C. Well Volume (L)	0.98
E. Liquid Depth (ft) (A-B)	6.13	E. Three Well Volumes (L)	2.94

Parameter	Beginning	1	2	3	4	5
Time (min.)	1015	1020	1025	1030	1035	1040
Depth to Water (ft)	4.87	4.62	4.62	4.74	4.55	4.32
Purge Rate (l/min)	.7 @	.7	0.7	0.7	0.7	0.7
Volume Purged (L)	3.5	7	10.5	14	17.5	21
pH	5.68	5.68	5.68	5.70	5.72	5.72
Temperature (°C)	16.22	16.41	16.97	16.99	16.87	17.47
Conductivity (μmhos/cm)	123	120	121	124	126	130
Dissolved Oxygen (mg/L)	0.27	0.21	0.15	0.11	0.28	0.13
Turbidity (NTU)	124	112	78	78	62	53
eH (mV)	60	50	17	-10	-11	-16

Total Quantity of Water Removed (L):	48		
Samplers:	RC/BA	Sampling Time (Start/End):	1133-1150
Sampling Date:	6/18/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	NASBFF04MW009		
Sample Parameters:	VOC, TPH GRO, TPH DRO		
Comments and Observations:	@ unable to adjust lower		

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name:	Fuel Farm	Project Number:	29600.35	Date:	6/18/98
Well ID:	MW211	Field Personnel:	BA, RC		

Parameter	6	7	8	9	10	11
Time (min.)	1045	1054	1100	1105	1110	1115
Depth to Water (ft)	4.56	4.44	4.55	4.33	5.10	5.13
Purge Rate (L/min)	0.7	0.7	0.7	0.7	0.7	0.7
Volume Purged (L)	24.5	28	31.5	35	38.5	42
pH	5.68	5.73	5.70	5.76	5.79	5.80
Temperature (°C)	19.22	18.09	19.37	17.55	15.95	15.53
Conductivity (μmhos/cm)	135	136	141	138	137	137
Dissolved Oxygen (mg/L)	0.06	0.04	0.50	0.0	0.0	-0.2
Turbidity (NTU)	59	53	46	50	78	95
eH (mV)	-28	-39	-40	-56	-65	-75

Parameter	12	13	14	15	16	17
Time (min.)	1120					
Depth to Water (ft)	5.13					
Purge Rate (L/min)	0.7					
Volume Purged (L)	45.5					
pH	5.81					
Temperature (°C)	15.62					
Conductivity (μmhos/cm)	139					
Dissolved Oxygen (mg/L)	-0.03					
Turbidity (NTU)	111					
eH (mV)	-85					

Comments and Observations: at 1110 - Water level is just above pump - Still pumping water.

1124 Stop pump to let well recharge and sample.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Site Name:	Old fuel farm	Project Number:	29600.35
Well ID:	MW 213	Well Lock Status:	locked
Well Condition:	good.	Weather:	cloudy 50's

Gauge Date:	6/17/98	Gauge Time:	1425
Sounding Method:	Interface	Measurement Ref:	TOC
Stick Up/Down (ft):		Well Diameter (in.):	2"

Purge Date:	6/17/98	Purge Time:	1428 - 1507
Purge Method:	grundfos	Field Personnel:	RC/BA
Ambient Air VOCs (ppm):	0.0	Well Mouth VOCs (ppm):	0.0

WELL VOLUME

A. Well Depth (ft):	11.57	D. Well Volume/ft (L):	.16
B. Depth to Water (ft):	3.80	C. Well Volume (L)	1.23
E. Liquid Depth (ft) (A-B)	7.67	E. Three Well Volumes (L)	3.68

Parameter	Beginning	1	2	3	4	5
Time (min.)	1429	1434	1441	1446	1449	1452
Depth to Water (ft)	3.80	3.90	3.84	3.84	3.84	3.84
Purge Rate (l/min)	0.8	0.8	0.8	0.8	0.8	0.8
Volume Purged (L)	0.8	4.8	8.8	12.8	15.2	17.6
pH	4.43	5.47	5.62	5.63	5.64	5.64
Temperature (°C)	15.10	13.91	15.60	16.01	15.95	15.81
Conductivity (µmhos/cm)	56	61	60	61	60	60
Dissolved Oxygen (mg/L)	6.95	6.78	6.79	6.70	6.70	6.69
Turbidity (NTU)	396	385	24	8.9	6	4
eH (mV)	90	103	105	114	113	120

Total Quantity of Water Removed (L):	20		
Samplers:	RC/BA	Sampling Time (Start/End):	1500 - 1507
Sampling Date:	6/17/98	Decontamination Fluids Used:	DI
Sample Type:	grab	Sample Preservatives:	HCL
Sample Bottle IDs:	ONASBFF04MW006		
Sample Parameters:	VOC, TPH DRO, TPH GRO		
Comments and Observations:			

Appendix D

Laboratory Report
Chemical Analysis of Ground Water

MW AND WP SAMPLE IDENTIFICATIONS
FOR OLD NAVY FUEL FARM
16-18 JUNE 1998

MW44	NASBFF04MW008
MW44-DUP	NASBFF04MWXD1
MW49	NASBFF04MW005
MW51	NASBFF04MW003
MW54	NASBFF04MW001
MW58	NASBFF04MW004
MW61R	NASBFF04MW007
MW62	NASBFF04MW002
MW211	NASBFF04MW009
MW213	NASBFF04MW006
WP01	NASBFF04WP007
WP02	NASBFF04WP001
WP03	NASBFF04WP017
WP04	NASBFF04WP014
WP04-DUP	NASBFF04WXD1
WP05	NASBFF04WP006
WP06	NASBFF04WP008
WP06-DUP	NASBFF04WXD2
WP07	NASBFF04WP011
WP08	NASBFF04WP012
WP09	NASBFF04WP013
WP10	NASBFF04WP005
WP11	NASBFF04WP010
WP12	NASBFF04WP002
WP13	Wellpoint bent
WP14	NASBFF04WP004
WP15	NASBFF04WP009
WP16R	NASBFF04WP016
WP17R	NASBFF04WP015
WP18R	NASBFF04WP018
WP20	Wellpoint broken
WP21	NASBFF04WP019
WP22	NASBFF04WP003

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

August 3, 1998

Mr. John Carnright
EA Engineering, Science, & Technology, Inc.
3 Washington Center
Newburgh, NY 12550

Re: Fuel Farm (29600.35)

Dear Mr. Carnright:

Enclosed is a revision to our report on the analysis of three water samples collected for the Fuel Farm project on 18 June 1998.

Please contact me if you have any questions or require further information and refer to report 981037rev. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

David F. Brennan

David F. Brennan
Laboratory Project Manager

enclosure

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981037**
Date: **3 August 1998**

This report contains the results of the analysis of three water samples collected on 18 June 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived by Federal Express at EA Laboratories on 20 June 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis. Operating under a variance from NFESC laboratory QA guidance, EA Laboratories stores aqueous samples for the determination of metals at 4C $\pm$ 2C until disposal.

Client Sample Designation	EA Lab Number
NASBFF04MW008	9807487
NASBFF04MWXD1	9807488
TRIP 2	9807489
NASBFF04MW009	9807490

Following this narrative section are a glossary of data qualifiers used in this report (Table 1) and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune,

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981037**
Date: **3 August 1998**

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calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

AROMATIC VOLATILES by GC - WATER (EA9807487 -EA9807490)

Sample Chronology: Four aqueous samples and associated quality control were analyzed on 01 July and 02 July 1998 for benzene, toluene, ethylbenzene, and xylenes (BTEX) plus methyl tertiary butyl ether (MTBE) by USEPA 40CFR, Part 136, Appendix A, Method 602. All holding times were met.

- Sample NASBFF04MW009 was reanalyzed at a fifty times (50X) dilution in order to bring the concentrations of target analytes within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

PURGABLE TPH by GCFID - WATER (EA9807487, EA9807488, EA9807490)

Sample Chronology: Three aqueous samples and associated quality control were analyzed on 01-02 July 1998 by Maine Method 4.2.17 for gasoline range organics (GRO). All holding times were met.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

Upon further review, two samples, NASBFF04MW008 and NASBFF04MWXD1, were re-quantitated using a curve without the high point (5000 ug/L). The re-quantitated results are included.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981037**
Date: **3 August 1998**

EXTRACTABLE TPH by GC - WATER (EA9807487, EA9807488, EA9807490)

Sample Chronology: Three aqueous samples and associated quality control were extracted on 23 June 1998 and analyzed on 10-11 July 1998 according to Maine Method 4.1.25 for diesel range organics (DRO). All holding times were met.

- A batch matrix spike/matrix spike duplicate (MS/MSD) was performed on another Brunswick sample, NASBFF04MW001.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

David F. Brennan 3 August 1998
David F. Brennan, Laboratory Project Manager

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: NASBFF04MW008

Lab Name: EA LABORATORIES | Report#: 981037

Lab Code: EA ENG | Client: FUEL FAR | Method: 4.2.17 | SDG No.:

Matrix: (soil/water) WATER | Lab Sample ID: #9807487

Sample wt/vol: 5.0 (g/mL) ML | Lab File ID: VD4J3012.D

Level: (low/med) | Date Sampled: 6/18/98

% Moisture: not dec. | Date Analyzed: 7/2/98

GC Column: DB-624 ID: 0.53 (mm) | Dilution Factor: 1.0

Soil Extract Volume: (uL) | Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No. / Compound	ug/L	Q
TPH-Gasoline Range	38	

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MWXD1

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: #9807488

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3013.D

Level: (low/med) ______ Date Sampled: 6/18/98

% Moisture: not dec. ______ Date Analyzed: 7/2/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No. / Compound	ug/L	Q
TPH-Gasoline Range	28	

FORM I VOA

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

July 28, 1998

Mr. John Carnright
EA Engineering, Science, & Technology, Inc.
3 Washington Center
Newburgh, NY 12550

Re: Fuel Farm (29600.35)

Dear Mr. Carnright:

Enclosed is our report on the analysis of 22 water samples collected for the Fuel Farm project on 18 June 1998. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981036. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

David J. Brennan

David F. Brennan
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

Fuel Farm
29600.35

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
(410) 771-4920

Report 981036

July 1998

TABLE OF CONTENTS
NAS Brunswick
EA Laboratories Report 981036

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1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981036**
Date: **28 July 1998**

This report contains the results of the analysis of 22 water samples collected on 18 June 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived by Federal Express at EA Laboratories on 20 June 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis. Operating under a variance from NFESC laboratory QA guidance, EA Laboratories stores aqueous samples for the determination of metals at 4C $\pm$ 2C until disposal.

Client Sample Designation	EA Lab Number
NASBFF04WP001	9807464
NASBFF04WPRB1	9807465
TRIP 2	9807466
NASBFF04WP002	9807467
NASBFF04WP003	9807468
NASBFF04WP004	9807469
NASBFF04WP005	9807470
NASBFF04WP006	9807471
NASBFF04WP007	9807472
NASBFF04WP008	9807473
NASBFF04WP009	9807474
NASBFF04WP010	9807475
NASBFF04WP011	9807476
NASBFF04WP012	9807477
NASBFF04WP013	9807478
NASBFF04WP014	9807479
NASBFF04WP015	9807480
NASBFF04WP016	9807481
NASBFF04WP017	9807482
NASBFF04WP018	9807483
NASBFF04WP019	9807484
NASBFF04WXD1	9807485
NASBFF04WXD2	9807486

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981036**
Date: **28 July 1998**

Following this narrative section are a glossary of data qualifiers used in this report (Table 1) and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

AROMATIC VOLATILES by GC - WATER (EA9807464 -EA9807486)

Sample Chronology: Twenty-three aqueous samples and associated quality control were analyzed on 01 July and 02 July 1998 for benzene, toluene, ethylbenzene, and xylenes (BTEX) plus methyl tertiary butyl ether (MTBE) by USEPA 40CFR, Part 136, Appendix A, Method 602. All holding times were met.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981036**
Date: **28 July 1998**

- Sample NASBFF04WP003 and sample NASBFF04MW006 were reanalyzed at fifty times (50X) dilutions in order to bring the concentrations of target analytes within calibration range.

- The batch matrix spike analyzed on 01 July 1998 was performed on another Fuel Farm sample, NASBFF04MWXD1.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

PURGEABLE TPH by GC/FID - WATER (EA9807464, EA9807465, EA9807467-EA9807486)

Sample Chronology: Twenty-two aqueous samples and associated quality control were analyzed by Maine Method 4.2.17 on 30 June and 01-02 July 1998 for total petroleum hydrocarbons (TPH) as gasoline range organics (GRO) . All holding times were met.

- Sample NASBFF04WP011 was reanalyzed at a two times (2X) dilution in order to bring the concentration of GRO within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions:

- The batch matrix spikes/matrix spike duplicates performed on samples NASBFF04WP001 and NASBFF04WP019 had recoveries for spiked compounds that were masked by high native concentration in the samples.

- Samples NASBFF04WP001, NASBFF04WP003, NASBFF04WP006 DL (10X), NASBFF04WP015, and NASBFF04WP019 had results of GRO above the upper calibration limit of 1000 ug/L and are flagged with an "E".

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981036**
Date: **28 July 1998**

EXTRACTABLE TPH by GC - WATER (EA9807464, EA9807465, EA9807467 - EA9807486)

Sample Chronology: Twenty-two aqueous samples and associated quality control were extracted on 23 and 24 June 1998 and analyzed on 10-12 July 1998 according to Maine Method 4.1.25 for diesel range organics (DRO).

- The batch matrix spike/ matrix spike duplicate (MS/MSD) extracted on 23 June 1998 was performed on another Fuel Farm sample, NASBFF04MW001. All data associated with these QC samples are included in this report.

- Sample NASBFF04WP001 was reanalyzed at a five times (5X) dilution, sample NASBFF04WP003 was reanalyzed at a twenty times (20X) dilution, sample NASBFF04WP015 was reanalyzed at a five times (5X) dilution, and sample NASBFF04WXD1 was reanalyzed at a four times (4X) dilution in order to bring the concentrations of diesel range organics within calibration range.

- Sample NASBFF04WP006 had surrogate recoveries below laboratory QC limits. The sample was re-extracted on 17 July 1998 ,twenty-two days outside holding time, and re-analyzed on 21 July 1998. Samples NASBFF04WP012 and NASBFF04WP019 also had surrogate recoveries below laboratory QC limits, but there was not enough sample to re-extract.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions:

- The batch matrix spike/matrix spike duplicate (MS/MSD) recoveries were masked by the high native concentration in the sample.

- Samples NASBFF04WP006 (37%), NASBFF04WP012 (19%), and NASBFF04WP019 (48%) had the recoveries of OTP below the lower QC limits of 50%. These low recoveries may indicate a low bias to the reported results for these samples.

Qualitative Interpretation:

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981036**
Date: **28 July 1998**

The chromatographic patterns for samples NASBFF04WP003, NASBFF04WP014, and NASBFF04WXD1 were consistent with a typical diesel fuel pattern.

The chromatographic pattern for sample NASBFF04WP001 was consistent with diesel fuel plus several other heavier petroleum products.

The chromatographic patterns for samples NASBFF04WP006, NASBFF04WP011, NASBFF04WP015, NASBFF04WP016, and NASBFF04WP019 were not consistent with the typical diesel pattern.

The chromatographic patterns for samples NASBFF04WPRB1, NASBFF04WP002, NASBFF04WP004, NASBFF04WP005, NASBFF04WP007- NASBFF04WP010, NASBFF04WP012, NASBFF04WP013, NASBFF04WP017, NASBFF04WP018, NASBFF04WXD2 contained individual peaks that were not consistent with fuel pattern.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

David F. Brennan 28 July 1998

David F. Brennan, Laboratory Project Manager

TABLE 1. LABORATORY ORGANIC ANALYSIS DATA QUALIFIERS [1]

Qualifiers other than those listed below may be required to properly define the results. If used, they are given an alphabetic designation not already specified in this table or in a project/program document. such as a Quality Assurance Project Plan or a contract Statement of Work. Each additional qualifier is fully described in the Analytical Narrative section of the laboratory report.

U Indicates a target compound was analyzed for but not detected. The sample Reporting Limit (RL) is corrected for dilution and, if a soil sample, for percent moisture, if reported on a dry weight basis.

J Indicates an estimated value. This qualifier is used under the following circumstances:

1) when estimating a concentration for tentatively identified compounds (TICs) in GC/MS analyses, where a 1:1 response is assumed,
2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the RL but greater than the method detection limit (MDL).

B This qualifier is used when the analyte is found in the associated method blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. For GC/MS analyses, this qualifier is used for a TIC, as well as, for a positively identified target compound.

E This qualifier identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

D When applied, this qualifier identifies all compound concentrations reported from a secondary dilution analysis.

A This qualifier indicates that a TIC is a suspected aldol-condensation product.

N Indicates presumptive evidence of a compound. This qualifier is only used for GC/MS TICs, where the identification is based on a mass spectral library search. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N qualifier is not used.

P When applied, this qualifier indicates a reported value from a GC analysis when there is greater than 25% difference for detected concentrations between the two GC columns.

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(1) These Data Qualifiers are added by the laboratory to provide additional information for the reported results. ***They should not be confused with the qualifiers applied to the reported data as a result of a data validation process performed independently of the laboratory reporting procedure.***

2. CHAIN OF CUSTODY

L14141 / 981026

Company Name:	Project Manager or Contact:
EA Engineering	John Cartwright
Project No. 29600.35	Phone: 914 565 8100
Dept. 2192 Task: 7250	Project Name: Fuel Farm
Sample Storage Location: FIO / H4 VOA	ATO Number:
Page 1 of 2	Report #: 981036

Parameter / Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC 602 BTEX MTBE	TPH GRO 4.2.17	TPH DRO 4.1.25	Maine Method								EA Labs Accession Number	Remarks
6/18/98	0900	X		NASBFFO4WP001 MS/MSD	24	X	X	X			MS/MSD						9807464	LPM: David Brennan
6/18/98	0830	X		NASBFFO4WPRB1	8	X	X	X									9807465	EAL - PS - 065
6/18/98	0830	X		TRIP2	3	X											9807466	
	1045	X		NASBFFO4WP002	8	X	X	X									9807467	
	1110	X		NASBFFO4WP003	8	X	X	X									9807468	Maine Methods
	1320	X		NASBFFO4WP004	8	X	X	X									9807469	required for
	1330	X		NASBFFO4WP005	8	X	X	X									9807470	GRO and DRO
	1345	X		NASBFFO4WP006	8	X	X	X									9807471	
	1400	X		NASBFFO4WP007	8	X	X	X									9807472	
	1415	X		NASBFFO4WP008	8	X	X	X									9807473	
	1440	X		NASBFFO4WP009	8	X	X	X									9807474	
	1455	X		NASBFFO4WP010	8	X	X	X									9807475	COC
	1505	X		NASBFFO4WP011	8	X	X	X									9807476	1 of 2
	1520	X		NASBFFO4WP012	8	X	X	X									9807477	
	1600	X		NASBFFO4WP013	8	X	X	X									9807478	L14153
	1615	X		NASBFFO4WP014	8	X	X	X									9807479	
	1630	X		NASBFFO4WP015	8	X	X	X									9807480	
	1645	X		NASBFFO4WP016	8	X	X	X									9807481	
	1655	X		NASBFFO4WP017	8	X	X	X									9807482	COC 00603266
	1730	X		NASBFFO4WP018	8	X	X	X									9807483	

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Report Deliverables: (1) 2 3 4 D (E)

EDD: Yes (No)

DUE TO CLIENT: 7/13/98

Sampler s by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
	6/18/98 1830				
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sampl Shipped by: (Circl)
Bruce D. Anderson	6/18/98 1100		6/20/98 10:30	801679124259	(Fed Ex.) Puro. UPS Hand Carried Other:

Cooler Temp. 2.2 C pH: ☐ Yes ☐ No Comments: Custody Seals Intact ☑ Yes ☐ No

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

WHITE—EA Laboratories YELLOW—EA Laboratories PINK—Project Manager *Shaded Areas for Lab Use Only*

L14141 / 981026

Company Name: EA Engineering	Project Manager or Contact: John Cartwright Phone: 914 565 8100
Project No. 29600.35	Project Name: Fuel farm
Dept.: 2192 Task: 7250	
Sample Storage Location: F10/V04 H4	ATO Number:
Page 2 of 2	Report #: 981036

Parameters/Method Numbers for Analysis

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Report Deliverables: (1) 2 3 4 D (E)
EDD: Yes (No)
DUE TO CLIENT: 7/13/98

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	BTEX VOC 602 MTBE	TPH GRO 4.2.17	TPH DRO 4.1.25 Maine Methods	EA Labs Accession Number	Remarks
6/18/98	1745	X		NASBFF04WP019	8	X	X	X	9807484	LPM: David Brennan
6/18/98	—	X		NASBFF04WPXD1	8	X	X	X	9807485	EAL-PS-065
6/18/98	—	X		NASBFF04WPXD2	8	X	X	X	9807486	
									9807468	
									9807469	
									9807470	
				* Maine DEPLOP methods required for DRO and GRO *						Maine methods required for DRO and GRO
										COC 2 of 2
										L14153
										COC 000 3266

Samples by: (Signature)	Date/Time 6/18/98 1830	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Relinquished by: (Signature)	Date/Time 6/19/98 1100	Received by Laboratory: (Signature)	Date/Time 6/20/98 0:30	Airbill Number: 801679124259	Sample Shipped by: (Circle) Fed Ex Puro. UPS Hand Carried Oth r:
Cool r Temp. 2.2c pH: Yes No Comments:			Custody Seals Intact Yes No		

NOTE: Pleas[illegible]ate m thod number for analyses requested. This will help clarify any questions [illegible]boratory techniqu s.

WHITE—EA Laboratories YELLOW—EA Laboratories PINK—Project Manager *Shaded Areas for Lab Use Only*

3. ORGANIC DATA

A. Volatiles

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP001

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807464

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4232.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	2	
	m&p-Xylenes	9	
95-47-6	o-Xylene	5	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WPRB1

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807465

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4209.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/1/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TRIP 2

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807466

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4210.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP002

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807467

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4211.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	2	
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP003

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807468

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4212.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	150	
108-88-3	Toluene	450	E
100-41-4	Ethylbenzene	110	
	m&p-Xylenes	330	
95-47-6	o-Xylene	120	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP003 DL

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807468 DL

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4247.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	50	U
71-43-2	Benzene	120	D
108-88-3	Toluene	570	D
100-41-4	Ethylbenzene	110	D
	m&p-Xylenes	530	D
95-47-6	o-Xylene	170	D

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP004

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807469

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4234.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP005

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807470

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4214.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP006

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807471

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4215.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	52	
108-88-3	Toluene	470	E
100-41-4	Ethylbenzene	460	E
	m&p-Xylenes	480	E
95-47-6	o-Xylene	450	E

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP006 DL

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807471 DL

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4246.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	50	U
71-43-2	Benzene	50	U
108-88-3	Toluene	710	D
100-41-4	Ethylbenzene	890	D
	m&p-Xylenes	4500	D
95-47-6	o-Xylene	2200	D

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP007

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807472

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4233.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	3	
95-47-6	o-Xylene	2	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
NASBFF04WP008

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807473

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4217.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound	Concentration	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	2	
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP009

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807474

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4218.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	2	
95-47-6	o-Xylene	1	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP010

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807475

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4235.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP011

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807476

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4220.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound		Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	14	
	m&p-Xylenes	27	
95-47-6	o-Xylene	10	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP012

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807477

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4221.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP013

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807478

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4222.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP014

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807479

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4223.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	3	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP015

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807480

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4224.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	42	
108-88-3	Toluene	100	
100-41-4	Ethylbenzene	7	
	m&p-Xylenes	22	
95-47-6	o-Xylene	18	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP016

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807481

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4244.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	2	
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP017

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807482

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4226.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	2	
95-47-6	o-Xylene	1	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP018

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807483

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4227.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	2	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP019

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807484

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4228.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	41	
108-88-3	Toluene	30	
100-41-4	Ethylbenzene	96	
	m&p-Xylenes	240	
95-47-6	o-Xylene	140	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WXD1

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807485

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4229.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound		Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	3	
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	2	
95-47-6	o-Xylene	1	

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WXD2

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807486

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4230.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

~~GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0~~

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound	Concentration (ug/L)	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: VB807014

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4197.D

Level: (low/med) Date Sampled:

% Moisture: not dec. Date Analyzed: 7/1/98

~~GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0~~

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound	ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: VBLK02

Lab Name: EA LABORATORIES   Report#: 981036

Lab Code: EAENG   Client: FUEL FAR   Method: 602   SDG No.:

Matrix: (soil/water) WATER   Lab Sample ID: VB807023

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: VB2A4239.D

Level: (low/med)   Date Sampled:

% Moisture: not dec.   Date Analyzed: 7/2/98

GC Column: DB-VRX   ID: 0.45 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound	ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

B. TPH-GRO

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP001

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: _____

rix: (soil/water) WATER Lab Sample ID: #9807464

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2979.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 6/30/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	2400	E

FORM I VOA

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WPRB1

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807465

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2982.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 6/30/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No. Compound (ug/L or ug/Kg) ug/L Q

TPH-Gasoline Range	10	U

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

July 22, 1998

Mr. John Carnright
EA Engineering, Science, & Technology, Inc.
3 Washington Center
Newburgh, NY 12550

Re: Fuel Farm (29600.35)

Dear Mr. Carnright:

Enclosed is our report on the analysis of three water samples collected for the Fuel Farm project on 18 June 1998. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981037. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

David F. Brennan

David F. Brennan
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

Fuel Farm
29600.35

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
(410) 771-4920

Report 981037

July 1998

TABLE OF CONTENTS
NAS Brunswick
EA Laboratories Report 981037

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981037**
Date: **22 July 1998**

This report contains the results of the analysis of three water samples collected on 18 June 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived by Federal Express at EA Laboratories on 20 June 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis. Operating under a variance from NFESC laboratory QA guidance, EA Laboratories stores aqueous samples for the determination of metals at 4C $\pm$ 2C until disposal.

Client Sample Designation	EA Lab Number
NASBFF04MW008	9807487
NASBFF04MWXD1	9807488
TRIP 2	9807489
NASBFF04MW009	9807490

Following this narrative section are a glossary of data qualifiers used in this report (Table 1) and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune,

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981037**
Date: **22 July 1998**

calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

AROMATIC VOLATILES by GC - WATER (EA9807487 -EA9807490)

Sample Chronology: Four aqueous samples and associated quality control were analyzed on 01 July and 02 July 1998 for benzene, toluene, ethylbenzene, and xylenes (BTEX) plus methyl tertiary butyl ether (MTBE) by USEPA 40CFR, Part 136, Appendix A, Method 602. All holding times were met.

- Sample NASBFF04MW009 was reanalyzed at a fifty times (50X) dilution in order to bring the concentrations of target analytes within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

PURGABLE TPH by GCFID - WATER (EA9807487, EA9807488, EA9807490)

Sample Chronology: Three aqueous samples and associated quality control were analyzed on 01-02 July 1998 by Maine Method 4.2.17 for gasoline range organics (GRO). All holding times were met.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

EXTRACTABLE TPH by GC - WATER (EA9807487, EA9807488, EA9807490)

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **Fuel Farm**
Project number: **29600.35**

Laboratory Project Manager: **David F. Brennan**
EA Laboratories Report: **981037**
Date: **22 July 1998**

Sample Chronology: Three aqueous samples and associated quality control were extracted on 23 June 1998 and analyzed on 10-11 July 1998 according to Maine Method 4.1.25 for diesel range organics (DRO). All holding times were met.

- A batch matrix spike/matrix spike duplicate (MS/MSD) was performed on another Brunswick sample, NASBFF04MW001.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

David J. Brennan 22 July 1998
David F. Brennan, Laboratory Project Manager

TABLE 1. LABORATORY ORGANIC ANALYSIS DATA QUALIFIERS [1]

Qualifiers other than those listed below may be required to properly define the results. If used, they are given an alphabetic designation not already specified in this table or in a project/program document. such as a Quality Assurance Project Plan or a contract Statement of Work. Each additional qualifier is fully described in the Analytical Narrative section of the laboratory report.

U Indicates a target compound was analyzed for but not detected. The sample Reporting Limit (RL) is corrected for dilution and, if a soil sample, for percent moisture, if reported on a dry weight basis.

J Indicates an estimated value. This qualifier is used under the following circumstances:

1) when estimating a concentration for tentatively identified compounds (TICs) in GC/MS analyses, where a 1:1 response is assumed,
2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the RL but greater than the method detection limit (MDL).

B This qualifier is used when the analyte is found in the associated method blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. For GC/MS analyses, this qualifier is used for a TIC, as well as, for a positively identified target compound.

E This qualifier identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

D When applied, this qualifier identifies all compound concentrations reported from a secondary dilution analysis.

A This qualifier indicates that a TIC is a suspected aldol-condensation product.

N Indicates presumptive evidence of a compound. This qualifier is only used for GC/MS TICs, where the identification is based on a mass spectral library search. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N qualifier is not used.

P When applied, this qualifier indicates a reported value from a GC analysis when there is greater than 25% difference for detected concentrations between the two GC columns.

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(1) These Data Qualifiers are added by the laboratory to provide additional information for the reported results. ***They should not be confused with the qualifiers applied to the reported data as a result of a data validation process performed independently of the laboratory reporting procedure.***

2. CHAIN OF CUSTODY

L14141/981026

Company Name: EA Engineering	Project Manager or Contact: John Cartwright Phone: 914 565 8100
Project No. 29600.35	Project Name: Fuel Farm
Dept.: 2192 Task: 7250	ATO Number:
Sample Storage Location: H4 E10 Nos	
Page 1 of 1	Report #: ~~981036~~ 981037

Parameter / Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC 602 BTEX MTBE	TPH GRO Mod. 4.2.17	TPH DRO Mod. 4.1.25	EA Labs Accession Number	Remarks
6/18/98	0945	X		NASBFF04MW008	8	X	X	X	9807487	~~9807464~~ LPM: David Brennan
6/18/98	—	X		NASBFF04MWXD1	8	X	X	X	9807488	~~9807465~~ EAL-PS-065
6/18/98	~~0830~~	X		TRIP2	3	X			9807489	~~9807466~~
6/18/98	1133	X		NASBFF04MW009	8	X	X	X	9807490	~~9807467~~
										Maine Methods required for DRO and GRO
				* GRO and DRO by Maine DEP Methods *						
										1 | 4 | 5 |
										COC 0003267
										~~COC 0003266~~

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Report Deliverables: (1) 2 3 4 D (E)

EDD: Yes/(No)

DUE TO CLIENT: 7/13/98

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
[signature]	6/18/98 1830				
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
[signature]		[signature]	6/20/98 10:30	801679124259	(Fed Ex.) Puro. UPS Hand Carried Oth r:

Cooler Temp. 2-2C pH: ☐ Yes ☑ No Comments: Custody Seals Intact ☑ Yes ☐ No

NOTE: Pleas indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

WHITE—EA Laboratories YELLOW—EA Laboratories PINK—Project Manager *Shaded Areas for Lab Use Only*

3. ORGANIC DATA

A. Volatiles

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MW008

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807487

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4204.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MWXD1

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807488

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4205.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/1/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: TRIP 2

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807489

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4203.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound	ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	1	U
100-41-4	Ethylbenzene	1	U
	m&p-Xylenes	1	U
95-47-6	o-Xylene	1	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MW009

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807490

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4207.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	1	U
71-43-2	Benzene	1	U
108-88-3	Toluene	710	E
100-41-4	Ethylbenzene	58	
	m&p-Xylenes	160	
95-47-6	o-Xylene	30	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MW009 DL

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EAENG Client: FUEL FAR Method: 602 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807490 DL

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VB2A4245.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-VRX ID: 0.45 (mm) Dilution Factor: 50.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
1634-04-4	Methyl t-Butyl Ether	50	U
71-43-2	Benzene	50	U
108-88-3	Toluene	2500	D
100-41-4	Ethylbenzene	70	D
	m&p-Xylenes	210	D
95-47-6	o-Xylene	78	D

B. TPH-GRO

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
NASBFF04MW008

Lab Name: EA LABORATORIES   Report#: 981037

Lab Code: EA ENG   Client: FUEL FAR   Method: 4.2.17   SDG No.:

Matrix: (soil/water) WATER   Lab Sample ID: #9807487

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: VD4J3012.D

Level: (low/med)   Date Sampled: 6/18/98

% Moisture: not dec.   Date Analyzed: 7/2/98

GC Column: DB-624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	10	U

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MWXD1

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807488

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3013.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	10	U

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MW009

Lab Name: EA LABORATORIES Report#: 981037

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807490

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3014.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/2/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	4400	

FORM I VOA

C. TPH-DRO

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MW008

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981037 SAS No.: _____ SDG No.: 9807487

Matrix: (soil/water) WATER Lab Sample ID: 9807487

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A151R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/23/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	110	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MWXD

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981037 SAS No.: SDG No.: 9807487

Matrix: (soil/water) WATER Lab Sample ID: 9807488

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A152R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/23/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	130	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04MW007

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981037 SAS No.: SDG No.: 9807487

Matrix: (soil/water) WATER Lab Sample ID: 9807490

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A153R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/23/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	900	

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: NASBFF04WP002

Lab Name: EA LABORATORIES   Report#: 981036

Lab Code: EA ENG   Client: FUEL FAR   Method: 4.2.17   SDG No.:

Matrix: (soil/water) WATER   Lab Sample ID: #9807467

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: VD4J2983.D

Level: (low/med)   Date Sampled: 6/18/98

% Moisture: not dec.   Date Analyzed: 6/30/98

GC Column: DB-624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No. / Compound	ug/L	Q
TPH-Gasoline Range	10	U

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP003

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807468

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2984.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 6/30/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	3900	E

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP004

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807469

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2985.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No. / Compound	(ug/L or ug/Kg) ug/L	Q
TPH-Gasoline Range	10	U

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP005

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807470

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2986.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No. Compound (ug/L or ug/Kg) ug/L Q

TPH-Gasoline Range	78	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP006

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807471

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3008.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 10.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No. Compound (ug/L or ug/Kg) ug/L Q

TPH-Gasoline Range	15000	E

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP007

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807472

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3007.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	45	

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP008

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

rix: (soil/water) WATER Lab Sample ID: #9807473

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2989.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No. / Compound	ug/L	Q
TPH-Gasoline Range	150	

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP009

Lab Name: EA LABORATORIES   Report#: 981036

Lab Code: EA ENG   Client: FUEL FAR   Method: 4.2.17   SDG No.:

Matrix: (soil/water) WATER   Lab Sample ID: #9807474

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: VD4J2990.D

Level: (low/med) ______   Date Sampled: 6/18/98

% Moisture: not dec. ______   Date Analyzed: 7/1/98

GC Column: DB-624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: ______ (uL)   Soil Aliquot Volume: ______ (uL)

CAS No. Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
TPH-Gasoline Range	43	

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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP010

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

rix: (soil/water) WATER Lab Sample ID: #9807475

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2991.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound	ug/L	Q
	TPH-Gasoline Range	180	

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP011

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807476

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3009.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No. Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
TPH-Gasoline Range	1800	

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP012

Lab Name: EA LABORATORIES   Report#: 981036

Lab Code: EA ENG   Client: FUEL FAR   Method: 4.2.17   SDG No.:

Matrix: (soil/water) WATER   Lab Sample ID: #9807477

Sample wt/vol: 5.0 (g/mL) ML   Lab File ID: VD4J2993.D

Level: (low/med)   Date Sampled: 6/18/98

% Moisture: not dec.   Date Analyzed: 7/1/98

GC Column: DB-624   ID: 0.53 (mm)   Dilution Factor: 1.0

Soil Extract Volume: (uL)   Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	70	

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP013

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807478

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2994.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No. Compound	(ug/L or ug/Kg) ug/L	Q
TPH-Gasoline Range	49	

FORM I VOA

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VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP014

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

rix: (soil/water) WATER Lab Sample ID: #9807479

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2995.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CAS No.	Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	180	

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP015

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: #9807480

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2996.D

Level: (low/med) Date Sampled: 6/18/98

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No. Compound		Q
TPH-Gasoline Range	1900	E

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: NASBFF04WP016

Lab Name: EA LABORATORIES　　Report#: 981036

Lab Code: EA ENG　　Client: FUEL FAR　　Method: 4.2.17　　SDG No.:

Matrix: (soil/water) WATER　　Lab Sample ID: #9807481

Sample wt/vol: 5.0 (g/mL) ML　　Lab File ID: VD4J2997.D

Level: (low/med) 　　Date Sampled: 6/18/98

% Moisture: not dec. 　　Date Analyzed: 7/1/98

GC Column: DB-624　　ID: 0.53 (mm)　　Dilution Factor: 1.0

Soil Extract Volume: (uL)　　Soil Aliquot Volume: (uL)

CAS No. / Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
TPH-Gasoline Range	85	

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP017

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: #9807482

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2998.D

Level: (low/med) ______ Date Sampled: 6/18/98

% Moisture: not dec. ______ Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CAS No. Compound	Concentration Units: (ug/L or ug/Kg) ug/L	Q
TPH-Gasoline Range	40	

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP018

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807483

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2999.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No. Compound (ug/L or ug/Kg) ug/L Q

TPH-Gasoline Range	24	

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WP019

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: #9807484

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3000.D

Level: (low/med) _____ Date Sampled: 6/18/98

% Moisture: not dec. _____ Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	3800	E

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
NASBFF04WXD1

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: #9807485

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3010.D

Level: (low/med) ______ Date Sampled: 6/18/98

% Moisture: not dec. ______ Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No.	Compound	ug/L	Q
	TPH-Gasoline Range	32	

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

NASBFF04WXD2

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.: ______

Matrix: (soil/water) WATER Lab Sample ID: #9807486

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3011.D

Level: (low/med) ______ Date Sampled: 6/18/98

% Moisture: not dec. ______ Date Analyzed: 7/2/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	10	U

FORM I VOA

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK01

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: VB806308

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J2976.D

Level: (low/med) Date Sampled:

% Moisture: not dec. Date Analyzed: 6/30/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units:

CAS No.	Compound	(ug/L or ug/Kg) ug/L	Q
	TPH-Gasoline Range	10	U

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLK02

Lab Name: EA LABORATORIES Report#: 981036

Lab Code: EA ENG Client: FUEL FAR Method: 4.2.17 SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: VB807017

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VD4J3004.D

Level: (low/med) Date Sampled:

% Moisture: not dec. Date Analyzed: 7/1/98

GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

Concentration Units: (ug/L or ug/Kg) ug/L

CAS No. / Compound	Concentration	Q
TPH-Gasoline Range	10	U

FORM I VOA

C. TPH-DRO

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP001

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807464

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A168R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.41

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	4600	E

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP001 DL

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807464 DL

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A201R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: 1.41

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	4700	D

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WPRB1

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807465

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A173R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.53

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	290	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP002

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807467

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A174R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	550	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP003

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807468

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A175R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.64

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	11000	E

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP003 DL

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807468 DL

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A202R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 20.0

GPC Cleanup: (Y/N) N pH: 1.64

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	10000	D

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP004

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807469

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A176R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.64

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	280	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP005

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807470

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A177R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	310	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP006

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807471

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A178R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.62

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	1600	

per DB

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP006 RE

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807471 RE

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A216R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 07/17/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/21/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 0.83

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	1200	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP007

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807472

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A179R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.6

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	320	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP008

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807473

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A180R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.63

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	360	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP009

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807474

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A181R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.73

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	340	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP010

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807475

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A182R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.73

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	420	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP011

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807476

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A185R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	660	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP012

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807477

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A186R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.79

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	66	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP013

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807478

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A187R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.78

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	150	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP014

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807479

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A188R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.81

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	2000	~~E~~

7/22/98

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP015

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807480

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A189R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	3000	E

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP015 DL

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807480 DL

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A203R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: 1.8

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	2500	D

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP016

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807481

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A190R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.77

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	630	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP017

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807482

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A191R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.76

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	150	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WP018

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807483

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A192R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.73

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	100	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

04WP019

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807484

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A193R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/12/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.7

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	1200	

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WXD1

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807485

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A147R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/23/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.37

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	3100	E

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WXD1 DL

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807485 DL

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A161R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: decanted:(Y/N) N Date Extracted: 06/23/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: 1.37

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	3000	D

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

04WXD2

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: 9807486

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A150R.D

Level: (low/med) LOW Date Received: 06/20/98

% Moisture: _____ decanted:(Y/N) N Date Extracted: 06/23/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 1.33

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	280	

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

TB806232

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: TB806232

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A130R.D

Level: (low/med) LOW Date Received:

% Moisture: decanted:(Y/N) N Date Extracted: 06/23/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/10/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	50	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB806241

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: TB806241

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A163R.D

Level: (low/med) LOW Date Received:

% Moisture: decanted:(Y/N) N Date Extracted: 06/24/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/11/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	50	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB807172

Lab Name: EA LABS Contract: FUEL FAR

Lab Code: EAENG Case No.: 981036 SAS No.: _____ SDG No.: 9807464

Matrix: (soil/water) WATER Lab Sample ID: TB807172

Sample wt/vol: 1000 (g/ml) ML Lab File ID: SV2A211R.D

Level: (low/med) LOW Date Received: _____

% Moisture: _____ decanted:(Y/N) N Date Extracted: 07/17/98

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 07/21/98

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
	DRO AS C10-28 EVEN	50	U